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Ex Bibliotheca
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IN HOC VOLVMINE
CONTINENTVR,

Geometricj Introductorij Libri Sex,
Quadraturę Circuli Libell?
Cubicationis Sphaerae Libell?
In Perspectiuam Introductio, } Caroli Bovillij. Et

Astronomicarum Speculationum libri duo Iacobi Fabij:

Il Renouard dà un titolo un poco diverso a quest'opera specialmente da principio ma in fondo questa è quella da lui registrata.

BIBLIOTECA ... ROMA

182 E 13

IN HOC VOLVMINE CONTINENTVR.

Geometriae introductorium libri sex
Quadraturae circuli libelli
Cubicationis sphaerae libelli
In perspectivam introductio
} Caroli Bovilli.

Astronomicum theoreticum libri duo Iacobi Fabri

Carolus Bouillus Veromandius Samarobrinus digniſſimo viro Iacobo Ramirio Gudmano Catanienſi epiſcopo.

C Ogitaui digniſſime preſul: iter ceteras diſciplinas/preſertim mathematicas negligi/in obſcutoue haberi. cum forte ob apparentē/ et nō exiſtentem/ earū difficultatem. tum magis ob hominū deſidiam: et ꝙ illos/earum latet vtilitas Atq̧ id quidem non immerito. nam vt ſeſe ſolaris radius apprime ſeipſo viſibilis: niſi in ſubiectam/imotam/atq̧ ad ſolem conuerſam oculorum aciem deſcendit/eidem ſe viſibilem prebens: in eam vero q̄ non ſubiecta/aut que temere diuertens/in contrarias tenebras pretendit/minime admittitut. ita et intellectualis ſpiritaliū diſciplinarū fulgor: eas dūtaxat hominū perluſtrat mentes/que ſolo ſciendi amore atq̧ deſiderio: ſeſe illis ex totis ſeipſis ſubiiciunt/in eis quieſcunt/et ad eas cōuertuntur. non que cōtrariis motibus/variiſq̧ deſideriis obuolute: diuiduas extrinſecus agūt vitas. Hec eni tria ſunt (preſtantiſſime vir) capeſſende diſcipline initia: ſubiectio/cōuerſio/ſtatus. que rudem quemq̧ animū/diſciplinis accōmodant: atq̧ ad eas introducunt. vtpote primū ſubiiciendus eſt animus: ſubiectus vero/cōuertendus. Conuerſus deniq̧/in eo ad quod cōuerſus eſt (quodq̧ intuetur) obiecto ſtabiliendus/imutabiliq̧ ſtatu confirmandus. Q ui ſecus imparati ad diſciplinas accedūt: aut vana fama illecti/aut turpis lucri cauſa: aut diuiduis quibuſq̧ affectibus/aduerſum ſeipſos diffidētes: hi longe ab intima diſciplinarū veritate/ad extremas earum tenebras delapſi aberrant. Nā neq̧ ſcire cupiunt: ſed magis aut apparere/ſciēteſq̧ videri: aut corporeis affluere diuitiis. et q quidē ſemetipſos/a percipienda veritate ꝑepediunt: ſuntq̧ ſuę ignorantię cauſa. Alios ꝓfectò diſciplina expetit alumnos: ſubiectos/ad eam (toto mētis propoſito) conuerſos: atq̧ in eodem propoſito cōſtantes / quos benigniſſimo cōgenee ſibi veritatis radio: indeſinenter enutriat/ac alat. Q꜡ autē diſciplinarū/ex facillimis mathematica habenda ſit: palā hac ratione diſce. Q꜡ vniuerſa obiecti ſit/ſuapte natura ſēſibilis. Q uadrifida eni eſt: atq̧ ob id quadriuiū dicta. numerorū/arithmetica: muſica/ſonorum: geometria/magnitudinū: aſtronomia verò/celorum. Eteni ſonos/magnitudines/celoſq̧ noſter per ſe ſenſus attingit. numeros verò non per ſe/aut ſaltem formales: qui ſoli rationali animę ſecreti inſunt. Et quoſquidem diſcretiuos/numeranteſq̧ vocant. ſed quoquo modo per illud/velut extrinſecā rerum ſenſibiliū multitudinem: qui numerus dicitur numeratus. Sed quorūcunq̧ ſenſus eſt: ea meritò nobis promptiora/ac notiora philoſophi adiudicant. quippe q̄ nobis (qui ſenſibili in corpore/ et mundo degimus nati) cōgenea/propinqua/et imediata. Ea verò, que ſimplex/et indiuiduus comprehendit intellectus/a nobis interſtite celo diſtantia: iure ardua/difficiliaq̧ cenſent. Atq̧ ea potiſſimū mathematicę pars: q̄ corporaliū rerū mēſuras/ipſaſq̧ magnitudines intuetur: tantò ceteris facilior exiſtimāda eſt/quātò nobis eius cognatius/ propiuſq̧ obiectum per ſe quidem ſenſibile/ac minime defluxum: ſed definito in ſubiecto conſtanter permanēs/ et noſtri

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ipſius corporis menſura. numerus quippe magnitudine ſecretior: quem vel ſi
velimus/minime liceat, vbi ſit, aſſignari. Sonus verò factus/è veſtigio diſperit/
ipſa ideo nobis magnitudine incertior. magnitudinis nãq; certiſſimi ſunt ſen=
ſus: hic quidẽ tactus/ille verò viſus. Et a nobis cęli: inacceſſibili fermè medio
diſtãt. vndè fit, vt numeri/ſoni/et cęli incertiores: magnitudines verò certiores
nobis ſint. et earũ ſcientia: nobis cęteris mathematice partibus prior/arduaq;
minus. Sed ne fortè peruioribus diſciplinis: minorem aut vtilitatẽ/aut digni=
tatem ineſſe exiſtimes (Sunt eni qui irrationabiliter infecundas/nulliuſq; vtili=
tatis mathematicas arbitrantur) Si quidem vulgata/corporeauè primũ predi=
cãda eſt vtilitas: egyptios ſacerdotes/Dedalũ/perdica/Chorebũ athenienſẽ/
Scytam Anacharſim/Syracuſiũ Archimedẽ: edoctiſſimos terrę menſores/atq;
geometras attẽde. primi egyptij ſacerdotes: cũ ĩundãte agros Nilo/egyptio=
rum termini ac metę confunderentur/vacare permiſſi: remetiendorũ agrorũ
rationem excogitantes/geometricę diſciplinę dederunt initium. Dedalus in=
extricabilem labyrinthũ fabricauit: quo cuiq; ſine glomere lini improperãti/
interclusus exitus negabatur. perdix (qui et Talãs dictus) dedali nepos: ſer=
ram/circinũq; repperit. Rotã/anacharſis ſcyta. figlinã verò/Chorebus athe=
nienſis. Archimedes marco marcello romano cõſule/ſyracuſanam ciuitatem
oppugnante: plurimis diebus non tam bellicis/q̃ geometricis reſtitit inſtru=
mentis. Si verò liberalior geometrię ſpectanda vtilitas eſt: Euclides megarẽ
ſis adeſt/cuius latiſſimũ illud opus/vniuerſos geometricarum deſcriptionum
edocet modos. multam contemplatiuis/atq; ex inferioribus ad altiora niten=
tibus: ſcandendi materiam ſubminiſtrans. Academicũ gynnaſiũ/nullos niſi
geometrię peritos/diſcipulos admittebat. vt qui primũ ex geometria proprij
corporis menſuram/equalitatem/perfectumq; ſtatum didiciſſent. Equat eni
geometria vndequaq; hominis corpus: format/ac erigit. incuruũ/imbecille/
variũ/ac difforme eſſe non ſuſtinẽs. Atq; vniuerſi corporis humani geſtus/ac
motus/ſola geometrię diſciplinę ratione/in perfectã quãdã ſpeciem formãdi
ſunt. Decet eni rationalẽ tantę ſpeciei animã/ſpecioſo pariter vaſe/atq; vehi=
culo in hac corporea ſenſibiliũ regione conſeruari. Hinc et geometrię rurſus
diſciplinę dignitas/et perfectio pendet. vt quę humanã quidem ſubſtantiam
(ſenſibilium oim ſubſtãtiarũ digniſſimũ finẽ) in ſublimia ęleuat/in eãq; trãſit
Hunc in modũ, vir pfectiſſime; geometricę ſciẽtię duplicẽ et vtilitatẽ/et digni
tatem approbabis: aliã quidẽ humani corporis: aliã verò anię. Et has noſtras
quãtulaſcũq; geometricas vigilias; tuo pcipies nomine/inſignes. Vale.

Caroli Bouilli Samarobrini Geometrici itroductorij liber primus
Ad clariſſimū virū Iacobū Ramiriū Gudmanū epiſcopū Cataniēſē
De magnitudinibus/earum terminis/interuallis / et interuallorum differentiis.

¶Magnitudo	¶Magnitudīs terminus	profunditas
Eius terminus	punctus	¶Interuallorū differētię
Eius interuallū	Linea	Surſum
¶Magnitudo	Superficies	Deorſum
Linea	¶Magnitudīs īteruallū	Dextrum
Superficies	Longitudo	Siniſtrum
Corpus	Latitudo	Ante
	Diffinitiones magnitudinū	poſt

m Agnitudo eſt vniuſcuiuſq; rei extēſio/a qua dicitur magna
Eadem et dimenſio/quātitas continua/ corporeaue mēſura dicitur.
Magnitudinis terminus: eſt quo ipſa clauditur magnitudo. Magnitudinis interuallū:id eſt ſpaciū/quod ipſam totā extendit. Interuallorum differētię ſunt eius extremitates/inter ſe oppoſitę.

Terminorum

punctus eſt lineę terminus:cuius pars nulla eſt. Linea verò ſuperficiei terminus:cui ſolùm ſecùndū longitudinē/partes inſūt. Sūperficies aūt terminus eſt corporis:cuius et ſecùndū longitudinē/et latitudinē eſt ſumere partes.

Interuallorum

Longitudo eſt quę ab imo in ſurſum protendit̃. Latitudo verò:que a dextris/ in ſiniſtrum. profunditas aūt:cuius ante/et poſt termini ſunt et differentię.

Differentiarum interuallorum

Interuallorū differētie: primū in vniuerſo/deinde et in nobis/ad vniuerſi ſimilitudinem diffiniende ſunt. Eſt autem in vniuerſo ſurſum: antarcticus polus.
Deorſum vero/arcticus Dextrum/oriens Siniſtrum occidens
Ante/meridies poſt deniq;/ſeptentrio.
In nobis aūt id ſurſum dicit̃: quod antarctico polo reſpōdet:vt caput. Id verò deorſum:qđ arctico/vt pedes. Dextrū:quod orienti/vt dextrū latus/et manus Siniſtrū quod occidenti:vt latus ſiniſtrum/et manus eidem infixa. Ante/quod meridiei:velùti noſtra facies. poſt deniq;/quod ſeptētrioni:qualia ſunt terga. Ex nobis aūt quecūq; ab extrinſeco noſtris differentiis è regione reſpondent: cōſimiliter nūcupamus.

Magnitudinū

Linea et ſuperficies : inter magnitudinis terminos diffinitę ſunt. Verùm non eadem eſt ipſorum/vt magnitudinis terminorum : et vt magnitudinū / ratio. Magnitudinis enī terminus/priuatiōe:ipa vero magnitudo/hītu eſt diffiniēda Nā linea dicit̃ ſupficiei terminus : vt eius extremitas/latitudine/et pfunditate vacans. Et eadem magnitudo:vt ſimplex longitudo.
Similiter et ſupficies corporis terminus cenſetur:vt eius vltimū/cui ſola deeſt/ profunditas. Et eadem magnitudo:quia longitudinē/et latitudinem habēs.
Corpus autē eſt pfecta magnitudo:triplici interuallo longitudine/ latitudine/

et profunditate diſtenta. Diffinitorum proprietates.

O Mnis magnitudo: actu finita eſt/cõtinua/et ifinita diuiſione ptibilis 1
Eadem vero potentia infinita/et diſcreta. Magnitudo actu dicit̃ in eo 2
quod eſt. potentia aut ẽ: veluti anime noſtre rationi ſubiacens.
Non contingit aliquando magnitudinem: totam/ac omnino eſſe diuiſam. 3
Magnitudinis partes/ſunt potentia infinite: actu autem ſemper finite. 4
Impoſſibile eſt omnes magnitudinis partes/aſſignari. 5
Magnitudo tota homogenea eſt: cuius quelibet pars eſt magnitudo. 6
Diuiſa vtcũq; magnitudine/ipoſſibile eſt ex diuiſione/eius terminos relinqui. 7
Nulla magnitudis ps/eius terminus ẽ: necvllus magnitudis terminus/eius ps. 8
Impoſſibile eſt ex ſuis terminis/magnitudinem conſtare. 9
Ex ſolis ſimiliaribus magnitudinibus: omnis conſtat magnitudo. 10

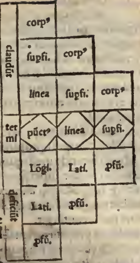
		p̄funditas
	Latitudo	latitudo
Lõgitudo	lõgitudo	lõgitudo
Linea	ſupficies	corpus
Punctum	linea	ſupficies
	punctũ	linea
		punctũ

Similiares magnitudines dicuntur: que ſunt eiuſdẽ ſpeciei/vt linee plures. 11
Ex punctis: nulla magnitudo accreſcit. 12
Omnes magnitudines ſũt tres: linea/ſupficies/et corpus. 13
Quota eſt vnaqueq; earũ in ſua ſpẽ: tot habet et termios/et iterualla. prima quidem vnũ: ſecũda/duo: tertia vero/tria. 14
Nec plures tribus eẽ magnitudines: nec magnitudinẽ plures q̃ tres termios/aut interualla habere eſt poſſibile. 15
Sola magnitudinũ tertia pfecta eſt: tres terminos/et interualla poſſidẽs. Cetere dne ſunt imperfecte. 16

Terminorum

O Mnis terminus (vt huiuſmodi) eſt nõ quantus/nõ continuus/impartibilis/incompoſitus/et ſimplex. 1
Omnes termini ſunt tres: punctus/linea/et ſuperficies. 2
Totus eſt vnuſquiſq; terminus: quota et ſua propria magnitudo. 3
propria alicuius termini magnitudo dicitur: que ab eo termino primũ/ac imediate terminatur. vt corpus/ſuperficiei: ſuperficies/linee: linea/vero puncti.
primus terminus prime magnitudinis ꝓprius: ſcd̄us/ſcd̄e: tertie vero/tertius. 4
proprius terminus eſt qui ſue magnitudini eſt immediatus. vt pũctus/linee: linea/ſuperficiei: ſuperficies autem/corporis.
Vnuſquiſq; terminus: omnes eas finit/clauditq; magnitudines q̃ ſe ſequũtur. 5
Omnis terminus tot interuallis deficit: quotus eſt poſt vltimã magnitudinẽ: et totidem rurſus interualla poſſidet: quotus eſt poſt terminũ primũ. 6
Quotquot rurſus vnuſquiſq; terminus claudit/finitq; magnitudines: idẽ totidem magnitudinũ interuallis priuatur. 7
Quicũq; terminus aliquod poſſidet iteruallũ: eſt et magnitudo. 8
Et quecũq; magnitudo aliquo triũ iteruallorũ priuat̃: eſt et ſimul terminus. 9

10 Diſpoſitis ordine quattuor: pūcto/linea/ſupficie/et corpore: extrema pūctū/et corpus ſimplicia ſunt: hoc quidē ſola magnitudo/nō terminus. illud vero ſolū terminus/minime magnitudo. Media autē linea/et ſupficies cōpoſita: vario relatu ſimł et termini/ et magnitudines.



11 Corpus ter magnitudo ē: nuſq̄ terminus. pūctus vero ter terminus: nuſq̄ magnitudo. Superficies aūt bis quidē magnitudo: ſemel tātū terminus. At linea bis ē pariter terminus: ſemel magnitudo.

Corpus	ſupficies	Linea	punctus	
3	2	1	0	Magni
0	1	2	3	Termi
3	2	1	0	Diuiſi.
0	1	2	3	Indiui.

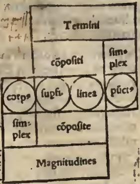
12 Hic corpus trina eſt magnitudo et ois: pūctus vero trinus/omiſq; terminus. Supficies autē magnitudo duplex: terminus ſimplex. Linea vero duplex terminus: ſimplex magnitudo.

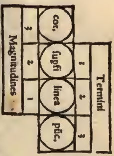
13 Terminus vt terminus/idiuiſibilis: diuiſibilis vero vt magnitudo. Et magnitudo ſcd̄m ſe diuiſibilis: termini ratione indiuiſibilis.

14 Corpus tribus diuiſibile: pūctū idiuiſibile. Supficies duobus diuiſibilis: indiuiſibilis vno. Linea vero vno tātū diuidit̄ interuallo: duobus indiuiſibilis.

15 Termini vt huiuſmodi: nullus eſt terminus.

16 Contingit et aliter terminos dici totos: quot ſūt magnitudines/que ab ipſis terminantur





17 Hoc ipſo numerādi modo: terminorū ordo/ordini magitudinū oppoſitus euadit. vt prime magnitudini/vltimus terminus ſit imediatus: et vltime primus.

18 Et hoc ordie/termiorū primus erit ſupficies: vnā ſolā magnitudinē definiēs.

19 Secūdus vero linea/duas determinās. vltimus aūt nouiſſimuſq; pūct⁹: quo ois magnitudo claudit̄

20 Eodem ordine quotus erit quiſq; terminus: tot habebit a ſe terminata. primus/vnū: ſecūdus/duo: tertius/tria.

21 Neceſſe eſt omnē terminū/ſupremo ſui terminati interuallo priuari. Terminatum: magnitudo termino finita.

22 Vltimus termiorū pūctus: ois magnitudinū iteruallī ipticeps eſt et imunis.

23 Quocirca idē ſolus/pfectus et maximus ē terminus: omifariā partiū exps. Inſup & corpori (vltie ac pfectiſſime magnitudini/ oiq̄q; diſibili) oppoſitus.

24 Omnis terminus in ſuo terminato cōſiſtit/ab eo inſeparabilis: ſimul idipſum definiens aut copulans eius partes.

25 Impoſſibile eſt eundē numero terminū: ſuā magnitudinē definire/et eius copulare partes.

i Nterualla perinde atq; magnitudines/ſunt diſtincta:et numero to= 1
tidem/quot et magnitudines.

Singula interualla:ſingulis magnitudinibus inſunt vt propria.primũ prime: 2
ſecunde ſecundum:et tertium/tertie.

Interuallorum et ſuarum propriarum magnitudinũ/idem eſt ordo.

Totum eſt vnũquodq; interuallum:quota et eius propria magnitudo. 3

Si idẽ iteruallũ pluribus ieſt magnitudinibus:ipm erit eius ꝓpriũ/cui primũ 4
ineſt.et ecõuerſo erit ei ꝓpria magnitudo. primũ/imediate/p ſe/nõ ſecundo/ 5
aut per aliud.

¶ Id primũ alicui ineſt:quod nulli priori ineſt.vt longitudo/linee.Supficiei/
latitudo:et corpori/profunditas.

¶ Id vero ſecundo ineſt:quod poſterius ineſt/et per prius aliquod. vt lõgi=
tudo/per lineam ſuperficiei/et corpori:latitudo corpori per ſuperficiem.

Cuicũq; magnitudini aliquod interuallũ ineſt nõ primũ:eius eſt cõmune. 6

Cuilibet magnitudini:vnũ ſolum propriũ eſt interuallũ.cõmunia aũt eidem/ 7
plura ineſſe contingit.

Quodlibet propriũ interuallũ:eſt ſue magnitudinis eſſentia. 8

Quota eſt vnaqueq; magnitudo:tot habet interualla. 9

Ab vltimo interuallo:quota eſt cuiuſlibet interualli denominatio:ipſum toti 10
dem numero magnitudinibus ineſt.

prima magnitudo ſimplici interuallo dimẽſa eſt:ſecũda/duplici:tertia/trino. 11

E diuerſo aũt vltimũ interuallũ vnã ſolã magnitudinem diſtendit: ſecundum 12
duas:tertium/tres.

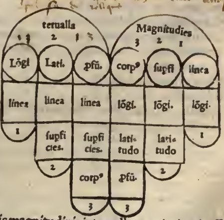
Oẽ prioris magnitudinis inter= 13
uallũ:eſt et poſterioris. Et ois
poſterior magnitudo : prioris
interuallum participat.

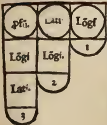
Oia poſteriora iterualla/priora 14
cõnectunt:a qbus ſunt inſepa=
rabilia.minie vero ecõtrario fit

Vnũqdq; interuallũ vno paucio 15
ra cõnectit iterualla : quota eſt
eius denominatio.

Quodlibet interuallũ : ſimul vt 16
et ſua magnitudo eſt diuiſibile

Hinc pũcto/interuallum adeſſe
poteſt nullum.



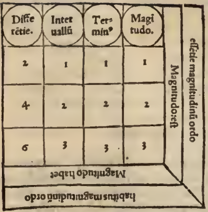


Neceſſe eſt proprium poſterioris magnitudinis interuallum:priori nõ ineſſe. 17

Omnia interualla:duabus ſui differentiis/et terminis actu finiuntur. 18

Eodem numero magnitudo eſt:terminos habet et interualla : cuius numeri 19
duplo/ſuorum interuallorum poſſidet differentias.

prime magnitudini:vnus terminus/et iteruallũ vnũ ineſt:due vero ſui inter= 20
ualli differentie.



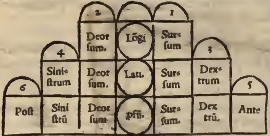
21 Secūde magnitudini: duo termini, duo interualla, et differētie interuallorum quattuor.

22 Tertie vero: tres inſunt termini, totidem interualla: et ſuorū interuallorum differentie ſex.

23 Quodlibet poſterius interuallum oim priorum differentias ſecum defert, eaſq; ſiml'ad ſeſe cōnectit.

24 Numerus differētiarum cuiuſq; interualli: numero ip̄m interuallum denominanti, duplus inuenitur.

25 Quodlibet interuallū: duas habet differētias, ſibi proprias: que eidē primū inſunt.



26 Due et due quelibet p̄prie et alicuius interualli differētie: inter ſe opponuntur.

27 poſterius interuallum proprias prioris differētias h₃, ſibi ipſi cōes

28 Impoſſibile eſt interuallum prius: propriarum ſui poſterioris differentiarum eſſe particeps.

29 Omnia interualla: cōuerſo ordine ſuis propriis differētiis, propria ſunt: et cōmunibus, communia.

Differentiarum interuallorum.

1 dVe et due quelibet proprie eiuſdem interualli differentie, oppoſite ſunt: et ſimul natura.

2 Harum altera ſemper perfecta eſt: et altera imperfecta.

3 Earum ordo: ſuorum interuallorum ordini par eſt. vt due prime, primi ſint interualli: due ſecunde, ſecundi: due vero vltime, tertii et nouiſſimi.

4 poſteriores differentie, oēs cōnectunt priores: non aūt priores, poſteriores.

5 Omnes differentie ſimul per ſua interualla diſpoſite: in idem medium punctū concurrunt: vt cōmune omnibus centrū, interuallorū differētiarūq; expers.

6 Oi poligonie magnitudini: iuteruallorū dr̄e p ſe, ſecūdum eius āgulos iſunt.

7 In circulari aūt, et ſpherica magnitudine: eedem differētie, per rectas ab intra ductas diametros in earum extremitatibus, aſſignantur.

8 Quelibet due et due oppoſite interuallorū differētie: maxime in ſuis magnitudinibus, ſecundum diametrum diſtant.

9 Singulorū q̄ dicta ſūt in ſpecie p̄prietates: ſequens determinatio p̄aplius demōſtrabit. Geometrici introductorij primi libri finis.

I Nterualla perinde atq; magnitudines/ſunt diſtincta:et numero to= tidem/quot et magnitudines. 1

Singula interualla:ſingulis magnitudinibus inſunt vt propria.primū prime: ſecunde ſecundum:et tertium/tertie. 2

Interuallorum et ſuarum propriarum magnitudinū/idem eſt ordo. 3

Totum eſt vnūquodq; interuallum:quota et eius propria magnitudo. 4

Si idē iteruallū pluribus ieſt magnitudinibus:ipm erit eius ꝓpriū/cui primū ineſt.et ecōuerſo erit ei ꝓpria magnitudo.primū/imediate/ꝑ ſe/nō ſecundo/ aut per aliud. 5

❡Id primū alicui ineſt:quod nulli priori ineſt.vt longitudo/linee.Superficiei/ latitudo:et corpori/profunditas.

❡Id vero ſecundo ineſt:quod poſterius ineſt/et per prius aliquod.vt lōgi= tudo/per lineam ſuperficiei/et corpori:latitudo corpori per ſuperficiem.

Cuicūq; magnitudini aliquod interuallū ineſt nō primū:eius eſt cōmune. 6

Cuilibet magnitudini:vnū ſolum propriū eſt interuallū.cōmunia aūt eidem/ plura ineſſe contingit. 7

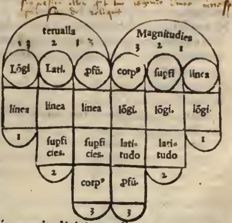
Quodlibet propriū interuallū:eſt ſue magnitudinis eſſentia. 8

Quota eſt vnaqueq; magnitudo:tot habet interualla. 9

Ab vltimo interuallo:quota eſt cuiuſlibet interualli denominatio:ipſum toti dem numero magnitudinibus ineſt. 10

prima magnitudo ſimplici interuallo dimēſa eſt:ſecūda/duplici:tertia/trino. 11

Ediuerſo aūt vltimū interuallū vnā ſolā magnitudinem diſtendit:ſecundum duas:tertium/tres. 12



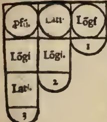
Oē prioris magnitudinis interuallū:eſt et poſterioris. Et ois poſterior magnitudo : prioris interuallum participat. 13

Oia poſteriora iterualla/priora cōnectunt:a qbus ſunt inſeparabilia.minie vero ecōtrario fit 14

Vnūqdq; interuallū vno paucio ra cōnectit iterualla : quota eſt eius denominatio. 15

Quodlibet interuallū : ſimul vt et ſua magnitudo eſt diuiſibile 16

Hinc pūcto/interuallum adeſſe poteſt nullum.

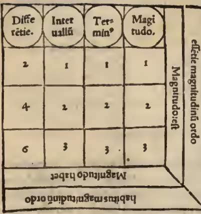


Neceſſe eſt proprium poſterioris magnitudinis interuallum:priori nō ineſſe. 17

Omnia interualla:duabus ſui differentiis/et terminis actu finiuntur. 18

Eodem numero magnitudo eſt:terminos habet et interualla : cuius numeri duplo/ſuorum interuallorum poſſidet differentias. 19

prime magnitudini:vnus terminus/et iteruallū vnū ineſt:due vero ſui interualli differentie. 20



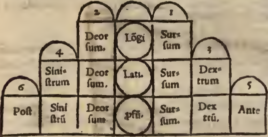
21 Secũde magnitudiní:duo terminí/ duo interualla/et differẽtie interuallorum quattuor.

22 Tertie vero:tres inſunt terminí/ totidem interualla/et ſuorũ interuallorum differentie ſex.

23 Quodlibet poſterius interuallum oím priorum differentias ſecum defert/eaſq; ſimul ad ſeſe cõnectit.

24 Numerus differẽtiarum cuiuſq; interuallí:numero ípm interuallum denominantí/duplus inuenitur.

25 Quodlibet interuallũ:duas habet differẽtias/ſibí proprias : que eidẽ primũ inſunt.



26 Due et due quelibet ꝓprie et alicuius interualli differẽtie:inter ſe opponuntur.

27 poſterius interuallum proprias prioris differẽtias hȝ/ſibí ípſi cões

28 Impoſſibile eſt interuallum prius:propriarum ſuí poſteriorís differentiarum eſſe particeps.

29 Omnia interualla:cõuerſo ordine ſuis propriis differẽtiis/propria ſunt:et cõmunibus/communia.

Differentiarum interuallorum.

1 d Ve et due quelibet proprie eiuſdem interualli differentie/oppoſite ſunt:et ſimul natura.

2 Harum altera ſemper perfecta eſt:et altera imperfecta.

3 Earum ordo:ſuorum interuallorum ordiní par eſt,vt due prime/primi ſint interualli:due ſecunde/ſecundi:due vero vltime/tertii et nouiſſimi.

4 poſteriores differentie/oẽs cõnectunt priores:non aũt priores/poſteriores.

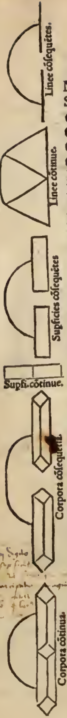
5 Omnes differentie ſimul per ſua interualla diſpoſite:in idem medium punctũ concurrunt;vt cõmune omnibus centrũ/interuallorũ differẽtiarũq; expers.

6 Oí poligonie magnitudiní:interuallorũ dr̃e ꝑ ſe/ſecũdum eius ãgulos iſunt.

7 In circulari aũt/et ſpherica magnitudine:eedem differẽtie/per rectas ab intra ductas diametros in earum extremitatibus/aſſignantur.

8 Quelibet due et due oppoſite interuallorũ differẽtie:maxime in ſuis magnitudinibus/ſecundum diametrum diſtant.

9 Singulorũ q̃ dicta ſũt in ſpecie ꝓprietates:ſequens determinatio pãplius demõſtrabit. Geometrici introductorij primi libri finis.



Geometrici introductorij liber Secundus de magnitudinibus/ cõ ſequentibus/contiguis/et continuis.

Magnitudines	Superficies	Terminantes
Sui termini	Corpora	Continuantes
❡Magnitudines	❡Sui termini	Neutri
Conſequentes	Diſtantes	puncta
Contigue	Simul et proximi	Linee
Continue	Iidem	Superficies
Linee		

DIFFINITIONES

Et magnitudines et earum termini: prius diffiniti ſunt.

Magnitudinum

Magnitudines cõſequẽtes: ſunt quibus nulla ſimilis intercipitꝰ magnitudo. Similis: eiuſdem ſpeciei/et rationis. Et ſunt ſolum cõſequentes: quãdo neqꝫ continue ſunt/neqꝫ cõtigue: ſed abinuicem/alterius rationis medio diſtant. Cõtigue vero magnitudines dicũtur: quarũ vltima ſunt ſimul/nullo inter ſe medio diſtantia. Cõtinue autem ſunt: quarũ vltima ſunt vnũ. Vnũ/idem/cõ mune: duabus aut pluribus magnitudinibus inexiſtens.

Linearum

Linee vero conſequentes: ſunt quas inter linea eſt actu nulla. Contigue autẽ: quarum vltima puncta/ſimul applicantur. Continue vero: que puncto eodẽ copulantur.

Superficierum

Superficies conſequentes: ſunt inter quas/nulla eſt ſupficies. Contigue vero quarũ vltime linee ſũt ſimul. Continue autem: quibus cõmunis linea aliqua ineſt.

Corporum.

Conſequentia corpora dicuntur: inter que non eſt actu definitum/aut eiuſdẽ nature corpus. Contigua vero: cum due eorum ſuperficies/ſunt ſimul. Continua autem: ſi extreme eorumdem ſuperficies ſint vna.

Suorum terminorum.

Magnitudinum termini: iiſdem rationibus conſequentes/contigui/et conti= nui (quibus et ſue magnitudines) dicũtur. verum cum termini contigui di= cũtur: ſimul ſunt. et cũ continui: ſunt vnũ. non autem contigue magnitudi= nes: ideo ſunt ſimul. neqꝫ continue/vna. Sunt autem ſimul magnitudinum termini: cum nullo magnitudinis interuallo/abinuicem diſtant. ſed indiuiſi biliter/ſecundum magnitudinem. Siue cum vt ij ſibiinuicem adiacent: nullũ magnitudinis conſtituunt interuallũ. ſed quiddam indiuiſibile. Termini ter minantes: ſunt extremi magnitudinis termini/quos nulla ſequitur magnitu do. Iidem: qui vnam tantum magnitudinem definiunt. Continuantes vero termini: ſunt quos et preit/et ſequitur aliqua magnitudo. Siue qui duabus/ aut pluribus magnitudinibus communiter inſunt. Item quibus ſecundum numerum iiſdem: due adinuicem magnitudines copulãtur. Aut qui ab vna

magnitudine in aliam pergendo: vnius fines/et alterius principia ſunt. Neutri vero dicuntur: in quibus incidentes ſibiinuicem magnitudines/angulum faciunt. Nam hos terminos/ſecundum rectum nulla ſequitur magnitudo. ſecundū obliquū vero/et reflexum: aliqua et preit/et ſequitur aliqua.

punctorum.

puncta diſtantia/et conſequentia: ſunt vltimi linearum ſeinuicem conſequentium termini. proxima vero/et ſimul: termini cōtiguarum linearum vltimi/ quibus inter ſe dicuntur contigue. puncta vero vnum ſunt: que(re eadē numero/duplicata ratione)vnius linee finis/et alterius principium dicuntur. Et hec ratione ſola duo ſunt puncta: re vero tantum vnum.

Linearum et ſuperficierum.

Linee et ſuperficies: cōſequentes/attigue/et vne: proportionabiliter vt et ipſa puncta diffiniende ſunt.

Diffinitorum proprietates.

Magnitudinū conſequentiū.

1 Omnes magnitudines conſequentes: ſunt inter ſe ſimiles/et ſpeciei eiuſdem.
2 Magnitudines conſequentes: neq; omnes/neq; nulle ſunt contigue/aut continue; ſed non nulle/et alique non.
3 Omnium magnitudinum ſolum conſequentium termini: diuiſibiliter/et aliquo magnitudinis interuallo diſiunguntur.
4 Inter ſolum conſequentes magnitudines: eſt diuiſibile ſpacium/alicuius magnitudinis capax.
5 Magnitudines eo ſolum pacto ſunt conſequentes: quo et continue/et contigue fieri poſſint.
6 Magnitudines non ſecundum ſe/ſed ſuos terminos: et conſequentes/et contigue/et continue dicuntur.
7 Conſequentes magnitudines primum ſola propinquitate contigue: deinceps et ex contiguis/per vnionem continue fiunt.

Contiguarum.

1 Omnes contigue magnitudines: ſunt et cōſequentes/ſed quedam continue/ nonnulle vero non continue.
2 Nulle magnitudines ſolum contigue: ſunt continue.
3 Omnes magnitudines ſolum contigue: actu due ſunt/abinuicem diuiſe/nullo communi termino participantes et ſpecie ſimiles.
4 Impoſſibile eſt cōtiguarum ſolum magnitudinum terminos/eſſe eoſdem.
5 Non contingit inter contiguas magnitudines: vllam magnitudinem/aut magnitudinis interuallum intercipi.
6 Omnes magnitudines contigue/et earum termini: ſunt indiſtantes.
7 Maxime ſecundum proprios/principaleſq; terminos: magnitudines cōtigue dicuntur. Secundum cōmunes vero terminos/minus.
8 Nulle magnitudines ſecūdū ſe: ſed ſecundū ſolos ſui terminos/ſunt cōtigue.
9 Magnitudines(que et ipſe termini ſunt)vt termini/contigue eſſe nō poſſunt:

ſed vt ſolum magnitudines/et terminate.

Contigue magnitudines oẽs:ſola ſeparatione/atq₃ diſtantia fiunt ſolũ cõſe-quentes. 10

Continuarum

Omnes magnitudines continue:ſunt et attigue/et conſequentes. 1

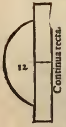
Neceſſe eſt cõtinuarum magnitudinũ terminos:actu eſſe eoſdem. 2

Impoſſibile eſt continuas magnitudines/abinuicem actu eſſe diuiſas:aut cõtra actu diuiſas/eſſe continuas. 3

Continuarũ magnitudinũ termini:neq₃ diſtãtes ſũt/ne ꝙ diuerſi ſed actu vni. 4

Magnitudines nõ ſecũdũ ſe/aut aliquas ſui ptes: ſed ſuis ſolis terminis/continuas eſſe contingit. 5

Magnitudines medie(que et termini ſunt)non vt termini/ ſed vt magnitudines continue eſſe poſſunt. 6



Maxime magnitudines ſcdm ꝓprios/principaleſq₃ termios cõtinue dicũtur. 7

Quecũq₃ ſcdm cões termios minuſq₃ pricipales ſũt cõtinue : improprie ſũt. 8

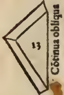
Omnes proprie continue magnitudines:ſunt ſimiles. 9

Omnes item minus apte continue:diſſimiles. 10

Oẽs magnitudines cõtinue ſũt quoquo mõ vna tota/ex vtriſq₃ ipſis cõſtituta. 11

Quecũq₃ ex recto/nõ facientes angulum ſunt cõtinue:precipue ſunt vne. 12

Que vero in cõmuni ſibi ipſis termino/angulũ complẽt:minus proprie/et ex obliquo vne dicuntur. 13



Ex continuis magnitudinibus:primũ per diuiſionem cõtigue/demũ vero ex attiguis interueniente diſtantia ſolũ conſequentes fiunt. 14

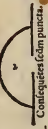
Linearum conſequentium

Omnes linee conſequẽtes:eodẽ modo ſeſe reſpiciũt/ et adinuicẽ cõuertũtur. 1

Conſequentium linearum reſpectus:duo puncta. 2

Que ſeinuicẽ mutuis longitudinibus reſpiciunt:aut extremũ vnius/alterius longitudinem:non ſunt conſequentes. 3

Contiguarum



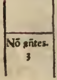
Si linee non ſunt conſequentes:neq₃ attigue. 1

Si duarum linearum extrema puncta ſint ſimul;et ſeſe ipſe ſecundum lõgitudinẽ reſpiciant/improprie erunt attigue. 2

Si linea vna extremo ſui puncto/alterius lõgitudinem contingat:neq₃ conſequentes erunt/neq₃ attigue. 3

¶Linea alterius longitudinem contingit:que medio eiuſdẽ puncto applicatur.aut que ſi in rectum producta fuerit/eandem ſecat.

Continuarum



Omnes linee nõ cõſequẽtes:aut cõſequẽtes/et nõ attigue:ſunt nõ continue. 1

Linee continue ſunt vna:et earum extrema/vnũ.atq₃ econuerſo. 2

Superficierum

Superficierum vt conſequentium/ cõtiguarum et cõtinuarum proprietates ad lineam ſumpte:proprietatibus linee ad pũctum ſunt proportionabiles.

Nam quod ad lineam punctum: hoc idem ad ſuperficiem, linea eſt.

Corporum.

Rurſus corporum proprietates vt cōſequentium, attiguorū, et continuorum ſumpte ad ſuperficiem: proprietatibus ſuperficiei ad lineā, et linee ad pūctū proportionantur. Idem eni eſt ad corpus, ſuperficies: quod ad ſuperficiem, linea. quodq; ad lineam, punctum.

Suorum terminorum diſtantium

1 Si duo termini diſtantes ſunt, et cōſequentes: inter ipſos nullum eiuſdem rationis medium, actu intercipi oportet.

2 Debēt termini diſtātes, diuerſis magnitudinibus ineſſe: et ſpeciei eſſe eiuſdē.

3 Contingit diſtantes termios. omni media intercepta magnitudine, adinuicē diſiungi.



3

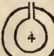
proximorum et ſimul

1 Quotlibet termini ſimul ſumpti: nullū magnitudinis interuallum efficiunt.

2 Omnes termini ſimul exiſtentes: ſimiles ſunt.

Inter terminos ſimul: nullum natum eſt intercipi medium.

3 Omnes ſimul rectarum magnitudinū termini diuerſis actu, diuiſiſq; magnitudinibus inſunt.



4 Contingit eiuſdē numero circularis, aut ſpherice magnitudinis termios eſſe ſimul.

5 Secundū oēs terios ſimul: magnitudines ſeſe tāgere et cōtigue eſſe nate ſūt.

Eorumdem

1 Quicūq; termini ſunt iidem: eorum res eſt vna, rationes vero plures.

2 Iidē termini: in eadē numero tota magnitudie, actu ptibus indiuiſa collocant.

3 Iidem termini: ſunt abinuicem inſeparabiles.

4 Termini iidem: ſunt indiſtantes, et indifferentes.

5 Omnibus terminis iiſdem: magnitudines continue eſſe nate ſunt.

6 Impoſſibile eſt eoſdem terminos: eſſe ſuarum magnitudinū extremos.

7 Omnes termini iidem: ſunt vnus, nō extremus ſed medius. ante ſe, et poſt ſe habens magnitudinem.

Terminantium

1 Omnis terminus ſolum terminās, eſt ſue magnitudinis extremus: et eius aut principium ſolum aut ſolus finis.

2 Idem vni ſoli magnitudini ineſt: cuius proprius eſt terminus.

3 Si terminanti termino, ſua antecedit magnitudo: nulla eūdem ſequitur. aut ſi ſequatur, nulla eidem antecedit.

4 Ante terminū terminantem, aut poſt eūdem: tota eius relinquit magnitudo.

5 Impoſſibile eſt ante terminātem terminū, et poſt eūdem: diuerſas ſue magnitudinis conſiſtere partes.

6 Terminans terminus ſimplex eſt: vnā tantū rationem, ad ſuā magnitudinem participans.

7 In terminante termino: nō contingit eius magnitudinem, eſſe diuiſibilem.

Terminū terminantem:aut nulla ſue magnitudinis pars ſequitur/aut eidem nulla antecedit. 8

Terminans terminus:in quo nichil eſt ſue amplius magnitudinis accipere ex tremo collocatur. 9

Terminās terminus/eſt actu terminus:ſcd̄m actū/in ſua magnitudie cōſiſtēs 10

Non vbiq̧ in magnitudine:eſt terminus terminans. 11

Magnitudini ſecūdum ſuas tantū extremitates : terminās terminus ineſt. vt qui eſt ſue magnitudinis extremitas:et quem ī ſue magnitudinis medio ſumere eſt impoſſibile. 12

Omnis terminans terminus:magnitudini ſecūdum ſe totam/ineſt. 13

Impoſſibile eſt magnitudini vt partes habenti/ſeu ſecūdum eius partes: terminantem terminū ineſſe. 14

Terminātiū terminorū cuiuſq̧ magnitudinis numerus:actu finitus eſt /et determinatus. 15

Non contingit magnitudinis partes:terminante eius termino copulari. 16

Terminās terminus:ſuā magnitudinem ex neceſſitate claudit/terminat/atq̧ finit. 17

Continuantiū terminorum

Terminorū continuantiū proprietates:terminantiū proprietatibus opponūtur.pīndeatq̧ continuantes termini/terminantibus.

Nā termināt̄es termini:ſunt medij/nō extremi/iidē/et vnius pricipia/alterius vero fines. 1

Duabus magnitudinibus(que tamē ſunt vna tota)cōmunes:nō vni proprij. 2

Neq̧ ante totam ſui magnitudinem:neq̧ poſt totam. ſed ante aliam quidem eius partem/atq̧ poſt aliam. 3

Compoſiti/duarūq̧ rationū:nō ſimplices/aut rationis tantum vnius. 4

In quibus eorum magnitudines neceſſario diuiduntur:aut diuidi nate ſunt. 5

Quos et aliqua ſue magnitudinis pars preit:et aliqua ſequitur. 6

Vbi eſt ſue magnitudinis ſumere partem reſiduam:collocari. 7

Non actu/ſed potentia termini:et potētia ſolum in ſuis magnitudinibus cōſiſtentes:cuius diuiſione/in actum prodeunt. 8

In ſuarū magnitudinū medio poſiti:quarum ſunt et medietates. 9

Quos in extremis ſue magnitudinis/impoſſibile eſt ſumere. 10

Qui non ſecundū totā ſui magnitudinē:ſed ſcd̄m eius ptes/eidē inexiſtunt. 11

Quorum indefinitus eſt numerus. 12

Quibus ſolis:ſuarū magnitudinū partes/adinuicem copulantur. 13

Qui neq̧ magnitudinē claudūt/terminant/finiūtq̧:ſed faciunt ſolū eſſe vnā/ et in ſuis partibus continuam. 14

Neutrorum terminorum



Neutri termini:in rectis magnitudinibus ſumi non poſſunt. 1

Solis angularibus reflexiſq̧ magnitudinibus neutri termini inſunt. 2

Recto magnitudinis inceſſu:neuter terminus/eſt ſolum terminans. obliquo vero/atq̧ reflexo: ſimul terminans/et continuans. 3

punctorum linearum et ſuperficierum.
punctorum aūt/linearū/et ſuperficierum(vt terminorum)ſcd̄m diſtantia/cōſequentia/ſimul/proxima/eadem/vnū/termināſ/ſolum terminans/ cōtinuās ac neutrū proprietates:ex oppoſitione magnitudinū ſumende ſunt.
Geometrici introductorij libri ſecundi finis.

GEOMETRICI INTRODVCTORII

liber tertius de punctis.

¶punctus	¶Medius
In linea	Equaliter
Extra lineam	Inequaliter
¶In linea	¶Extra lineam
Extremus	Centrum
Medius	Ad voluntatem datus

Diffinitiones punctorum

Quid punctus/prius diffinitum eſt.
punctus in linea:eſt qui alicui linee/actu ineſt.
Extra lineam vero:qui per ſe ſine determinata linea/eſt aſſignatus.

punctorum in linea.

punctus linee extremus:eſt a quo linea incipit/aut in quem deſinit.
Medius vero:quicūq; eiuſdem linee partes coniungit.

Mediorum

Medius linee punctus equaliter dicitur : cum quas eius copulat partes/ſunt inter ſe equales.
Inequaliter vero:cum inequales.

punctorum extra lineam.



Centrū eſt per ſe pūctus:qui a circūquaq; ipſum ambiente linea/aut ſupficie (que circuli/aut ſphere circūferentia dicitur)equidiſtat
Tum vero idē punctus/ab huiuſmodi circūferentia equidiſtare dicit̄:quādo oēs linee recte/ab eodem ad ipſam circūferentiā producte ſunt equales.
Dicuntur aūt linee/ac vero et oēs magnitudines equales:quarū vna quidem alteri applicata/nec eam excedit/nec ab eadem ſuperatur.
punctus vero ad voluntatem datus:eſt qui quocūq; in loco/ex propoſito ad aliquod conſequens/aſſignatur.

Diffinitorum proprietates
punctorum

1 punctū omnifariā partium immune eſt:et ſimpliciter indiuiſibile.
2 Non eſt magnitudo:ſed omniū magnitudinū terminus.
3 preter id quod eſt:nichil habet.
4 Eſt oim magnitudinū principium:et minimū ſimpliciter.
5 Ipſum non ſuipſius eſſentia/ſiue eo ipſo quod eſt:ſed propria ſolum virtute/

ſuoue motu/omnē de ſe magnitudinem gignit.
Ex eo:nulla cōponit̄ magnitudo. Necvlla in ip̄m magnitudo eſt reſolubilis. 6
Nullius magnitudinis eſt pars. 7
Eſt ꝓprius linee terminus: ceterarū vero magnitudinū/terminus cōmunis. 8
Ante ipſum/nichil eſt magnitudinis: ſed eo/poſterior eſt omis magnitudo/ omniſq; magnitudinis terminus. 9

punctorum in linea

Omnis punctus: ſimpliciter in linea/et ſuperficie/et corpore/conſiſtit. 1
Solis punctis linea et actu terminata eſt et continua. 2
Impoſſibile eſt in linea: puncta ſibiinuicem proxima eſſe. 3
Inter quecūq; duo puncta: mediā aut actu/aut potentia protenſam intercipi lineam oportet. 4
proximis in linea exiſtentibus punctis: linea ex ſolis punctis conſtabit. 5

punctorum extra lineam

Impoſſibile eſt ſimpliciter punctum/extra lineam collocari. 1
punctum ſolum ad nos/et ſenſum/et actum: extra lineam collocatur. 2
punctum extra lineā aſſignatū: nullius actu linee aut principiū/aut finis eſt/ aut continuans terminus. 3
Ab omni puncto extra lineā aſſignato: ad aliud quodcūq; rectam/ aut curuā lineam deducere contingit. 4
Circa q̄dlibet aſſignatū extra lineā pūctū: poſſibile eſt curuā lineā deſcribere 5
Contingit punctū quodlibet extra lineā aſſignatū: fieri circuli centrum. 6

punctorum in linea extremorum.

Quecūq; prius terminatis terminiallate ſunt proprietates: eedem et punctis linee extremis cōueniunt. Sunt eni pūcta linee extrema: eius termini/ſolum terminantes.
Cuilibet linee recte/et portioni circūferētie: duo tantū extremā inſunt pūcta. non plura/aut pauciora. 1
Impoſſibile eſt rectam lineam/aut circūferentie portionem: vno ſolo puncto/ aut actu tribus terminari. 2
perfecte/ac toti circūferentie: extremū punctum nullum ineſt. 3

Mediorum.

Quecūq; rurſum continuāti termino/proprietates cōueniunt: eedem et mediis linearū punctis/proportionabiliter aſſignētur. Media eni linearū pūcta: ſunt continuantes earum termini.
Cuilibet linee: infinita numero media puncta/ſecundū potentiam inſunt. 1
Nulla linea ſecundū actum/media habet puncta. 2
perfecte/ac totius circūferentie: nulla ſunt actu puncta. 3
Omnia totius circūferentie puncta: ſunt media. 4
In mediis ſolum punctis: omnis linea nata eſt diuidi. 5
Si duarum linearum rectarum/media puncta ſint vnū: he aut vna ſunt linea/ aut diuerſe ſeinuicem ſecantes. 6



Mediorum equaliter

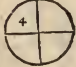
1 Si duarum linearum/media equalia puncta aut ſimul ſunt/aut vnũ: per media equalia/vtraq; alteram ſecabit.

2 Omnis linea recta/et circunferentie portio: vnũ tantũ habet punctum/equale ſui medium. quo ſolo/in duo equa nata eſt diuidi.



3 Omnis circũferẽtia: duo media equalia puncta/ ſecundũ potentiã participat. quibus efficitur in duo equa partibilis.

4 Si duarũ linearũ equaliũ/media equalia pũcta aut ſimul ſint aut vnũ: circulus ab eo puncto/mediis earũ longitudinibus deſcriptus neutram ſecabit.



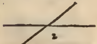
Mediorum inequaliter

1 Omnis linea: media inequalia pũcta/habet ſcd̃m potentiam numero infinita.

2 Impoſſibile eſt lineam: in medio inequali puncto/equaliter diuidi.

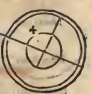
3 Toti circũferentie/medium punctũ inequale/aut nullum ineſt.

4 Si duarũ linearũ equaliũ/media inequalia pũcta ſiĩ ſint/aut vnũ: ĩpoſſibile eſt circũferentiã ab eo pũcto ſcd̃m aliquã ſectionũ deſcriptam/ vtriſq; vtrarũq; extremitatibus applicari.



5 Omnis linea: in puncto inequali medio/inequaliter eſt diuiſibilis.

6 Linee partes: que inequali medio eius puncto copulantur: ſunt inequales. altera quidem maior/altera vero minor.



punctorum extra lineam

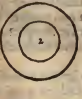
Centri

1 Centrum cuius eſt: vnum ſolum eſt.

2 Idem: ſimul plurium eſſe poteſt.

3 Eiuſdem: impoſſibile eſt plura eſſe centra.

4 plurium/plura eſſe centra contingit.





5 Centrum eſt circũferentie principium.

6 Sine centro: nulla eſſe poteſt circũferentia.

7 Centrũ ſine circũferentia eſſe contingit: at non actu centrum dicitur.

8 Circa idipſum ſolum: omnis eius circũferentia deſcribitur.

9 Centrũ circũ quaq; maxie a ſua circũferẽtia et q̃libet eius pte et pũcto diſtat.

10 Hinc centrũ toti circũferentię et cuilibet eius parti et aſſignabili pũcto omni quaq; eſt ęquidiſtans.

Ad voluntatẽ dati.

1 Omnis punctus ad voluntatẽ datus: ad quodlibet/eſt ſimpliciter indifferẽs.

2 Idem ex noſtra ſolũ volũtate/et propoſito: differentiam ſumit.

3 Cum datus eſt ad voluntatę punctus: ꝓpoſitũ eſt/cui ſit rei accõmodandus.

4 Contingit ab eo/ad quodlibet aliud pũctũ: aut à quolibet pũcto alio/ad ipm lineam rectam/aut curuã deducere.

5 Item et circa ipſum circũferentiam protrahi.

6 Idcirco fieri poteſt linee recte/aut curue: nũc principiũ/nũc mediũ/nunc vero finis. Atq; inſuper curuarum centrum.

Geometrici introductorij tertij libri finis.

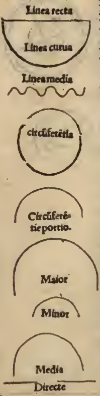
Geometrici introductorij liber quartus de lineis.

¶Linea
per ſe
Ad aliud
¶per ſe
Recta
Curua
Media
¶Curua
Circūferentia
Circūferentie portio
¶Circūferentie portio
Maior
Minor
Media

¶Ad aliud
Recta ad rectam
Recta ad curuam
Curua ad curuā
¶Recta ad rectā
Directa
Equidiſtans
Secans
perpendicularis
Obliqua
Rationalis
Commenſurabilis
Incōmenſurabilis
¶Recta ad curuā

Diameter
Chorda
Contingens
Applicans
Secans
¶Curua ad curuā
Equales
Inequales
Similes
Diſſimiles
Concentrice
Eccentrice
Contingentes
Secantes

Diffinitiones linearum



Linea prius eſt diffinita.
Linea per ſe:eſt quę non alterius alicuius rei collatione ſumpta eſt.
Linea verò ad alterū:ea eſt que ad aliquid propria ſui ratione dicitur.

Linearum per ſe

Linea recta eſt:quę a puncto ad punctum breuiſſime extenta ſuccedit.
Linea curua:eſt quę equaliter circa aliquod punctum protenditur.
Hoc verò pūctum/eius centrū dicitur. Quid aūt centrū/prius diffiniuimus.
Linea media:eſt quę inequaliter recta eſt/et inequaliter curua.

Curuarum

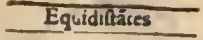
Circūferentia eſt linea curua:ſola ſuperficiē circūquaq;/ſuo ambitu excipiēs. Eadē eſt et quā ſemidiametri circūquaq; ſuo cētro reuolute:deſcribit extremitas. Circūferentię portio:eſt circūferētię pars/ſuperficiem nō totam ſuis ſinibus excipiēs. Rurſus eſt quā partim reuoluta cētro ſemidiameter: extremo ſui pūcto deſcribit.

Circūferentię portionū

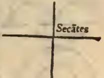
Maior circūferentię portio:eſt quę ſuas extremitates/ vltra cētrum porrigit. Tum verò ea ſuas extremitates vltra centrū porrigit:quādo linea recta eius copulans extremitates/ vltra centrum tranſit:ipſum vt portionem claudēs. Minor aūt circūferētię portio:eſt cuius extremitates/citra centrū deficiunt. Citra centrum verò eius extremitates deficiūt:quando linea recta eiſdē ſubtenſa/citra centrum tranſit.id quidem ſub ſe extra portionem relinquens. Media circūferētię portio dicitur: cuius extremitates ſunt ad centrū directę. Dicuntur autem eius extremitares ad centrum directę:cum ſubtenta eiſdem recta linea/per ipſum tranſit centrum.

Rectarum ad rectam

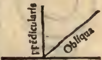
Recta ad rectam directa eſt:cuius longitudo/alterius longitudini coincidit. At verò duarū linearū lōgitudines coincidūt:cū earū altera quātūlibet ī vtrāq;



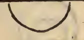
partem producta/alterã non ſecat: nec ab eadẽ diſtat. ſed ſimul cũ ea fit vna.
Recta ab altera equidiſtans: eſt quę ſi indefinite in vtrãq; partem extendatur: alteri nunq̃ propinquabit.



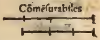
Lineę ſe ſecantes ſunt: quę mediis ſuis punctis/ſibiinuicem in eadem ſupſicie applicantur.
Siue quarum vnius longitudo: per mediam alterius longitudinẽ protẽditur.
Linea verò perpendicularis eſt: quę alteri inſiſtens/angulos aut actu/aut potẽtia ex vtraq; parte (circa ſe) relinquit equales.
Quid autem angulus: poſtea dicendum.



Linea alteri obliqua eſt: quę cum eidem inſiſtit/angulos ex vtraq; parte cõſtituit inequales.

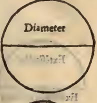


Linea rationalis: eſt quãcũq; nobis ratiocinantibus proponimus. Et eſt ceterarum omniũ q̃titatum: conſtituta ad placitum menſura.
Lineę cõmenſurabiles ſunt: quarũ mutua ꝓportio/eſt vt numeri ad numerũ.

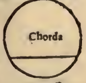


Dicitur autem mutua duarum quãtitatũ proportio/vt numeri ad numerum: quando vtręq; totę in aliquot partes equales/ſunt diuiſibiles.
Incommenſurabiles verò lineę dicuntur: quarũ non eſt vt numeri ad numerũ proportio. Siue quas/nulla cõmunis q̃titas metitur.

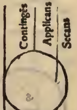
Rectarum ad curuam



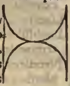
Diameter eſt linea recta: in circũferentię ambitu/ſuper eius centrũ cõſiſtens: vtrimq; ipſi circũferentię applicata.
Rurſus eadem eſt: quę mediam circũferentię portionem/ſubtendit.
Chorda verò eſt recta linea: q̃ extremis circuferentię portionibus/vt maiori/aut minori ſubtenditur.



Recta curuam contingere dicitur: quę eidem applicata/et in vtrãq; partem ꝓducta: eandem/aut perfectam eius circũferentiam non ſecat.
Recta curuę applicans eſt quę curuã tangit. et a contactu in rectũ producta/ſubinde eandem ſecat.
Recta curuam ſecans: eſt quę medio aliquo ſui pũcto/curuę in medio pariter aliquo ipſius puncto applicatur.

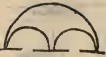


Curuarum ad curuam.



Curuę lineę equales dicũtur: quę ſimul quidem aliqua ex parte/in extremis ſuis pũctis cõiunctę: atq; ab huiuſmodi applicatione altera ſuper alteram inflexę/ ſeſe totas equaliter abſoluunt.
Eſt autem vnius curuę ſuper alteram reuolutio: motus in cuius trãſitu/idem vnius pũctũ/nullis duobus/aut pluribus alterius reſpondet/ſitq; proximũ. At vnius tantum ſingula: ſingulis alterius.
Curuę verò inequales ſunt: quibus/vt prius/ſimul applicatis/atq; altera ſuper alteram euoluta: earum vna tota ab altera abſoluitur. altera verò ab altera nõ tota/ſed quędam eius pars inabſoluta manet.
Et earũ/quę tota ab altera abſoluitur/ſed alteram nõ totã abſoluit: minor eſt.



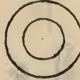


Curue ſimiles

Contra verò, quę non tota ab altera abſoluitur, reliquam totam abſoluēs: eſt proculdubio maior.

Curuę ſimiles ſunt: in quibus anguli ab extremis earum punctis ad arcū, aut centrum collocati: ſunt ęquales.

Diſſimiles verò: in quibus ſunt inęquales.

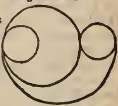


Cōcentrice

Concentricę curuę: ſunt quę circa idem numero centrum producuntur.

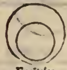
Eccentricę verò: quarum diuerſa ſunt centra.

Cōtingentes intra



Cōtingentes extra

Contingentes ſeinuicem curuę ſunt quę (et ſi portiones fuerint: in ſuas perfectè circūferentias) vnico dūtaxat ſui puncto, ſibi mutuo occurrunt.



Eccētrice

Secantes verò ſunt, quę (et ſi itidem portiones ſint: in ſuas circūferentias perductę) duobus tantū pūctis, ſibiinuicem intermiſcentur.

Diffinitorum proprietates.

Linearum.

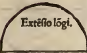
Linea eſt ſimplex longitudo: ſola habens puncta. 1

Quęlibet lineę pars, eſt linea. 2

In qualibet linea: quicquid eſt pręter lineam, eſt punctum. 3

Cetere linee proprietates: in ſuperioribus partibus adducte ſunt.

Linearum per ſe



Extēſio breuiſſima

Omnis linea per ſe: ad aliud nullum, dicitur id, quod eſt. 1

Lineę per ſe: abſoluta eſt ratio. 2

Linearum ad aliud

Omnis linea ad aliud dicta: quod eſt, ad alterum eſt. 1

Cuiuſlibet lineę ad alterum dictę: relatiua eſt ratio. 2

Linearum rectarum

A puncto ad punctum linea recta; nulla eſt breuior extenſio. 1

Quęlibet recta linea: ęqualiter in ſuis omnibus protenditur punctis. 2

Nulla rectę lineę pars, a parte altera: aut punctum a puncto ſubſultat. 3

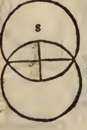
Totius rectę lineę, et omniū eius partium, atq; pūctorū: extenſio eſt vna, et ęqualis. 4

Linea recta: circa nullum punctum protenditur. 5

Impoſſibile eſt tria eiuſdem rectę lineę puncta: ab eodē tertio extra ipſam conſiſtente, ęqualiter diſtare. 6

Neceſſe eſt tria, aut plura rectę lineę puncta: a tribus, aut pluribus aliis punctis extra ipſam lineam in eadem longitudine ab eius longitudine ęqui diſtanti deſignatis: ęqualiter diſtare. 7





Data recta linea in duo ęqua diuiditur: ſi duobus circulis, ſuper extrema eius puncta (eadem ipſius longitudine) deſcriptis (quorum alter ex neceſſitate alterum ſecabit) ab altero interciſionis punctorū ad alterum recta ducatur li=

nea:quę partibus ęquis datam rectam diuidet.

9 Datę rectę lineę/equales quotlibet recte aſſignātur:ſi ab altero extremorum ipſius pūctorum/deſcripto ſecundū eius longitudinē circulo:ab eius demū cētro/rectę quotlibet ad circūferentiam producātur:quarum vnaqueq; erit datę rectę lineę ęqualis.



10 Quęlibet rectę lineę pars:eſt linea recta.

11 Rectam lineam:in curuas diuidi/impoſſibile eſt.

12 A quolibet puncto:rectas lineas numero infinitas/extendere licet.

13 Hinc vno tantùm puncto aſſignato:recta linea indefinita eſt.

14 Inter quęlibet duo puncta:recta tantùm vna protenditur.

15 punctis duobus aſſignatis:recta linea eſt aſſignata.atq; et duo puncta/primū rectam lineam determināt.

Curuarum

1 Nulla curua linea:a puncto ad punctum/breuiſſimè extenditur.

2 Omi linea curua:dabilis eſt ab vno eius pūcto/ad aliud extenſio minor.

3 Lineę curuę/medię partes et puncta:extremis ſupereminent.

4 Omnis linea curua:eſt ęqualiter circa aliquod punctū(vt centrum)in ſuis partibus/et punctis protenſa.

5 Omnia lineę curuę puncta:ab eius centro/ex neceſſitate ęquidiſtant.

6 Contingit a quolibet pūcto/& inter quęlibet duo puncta:infinitas curuas extendere.

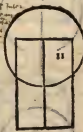
7 Hinc neq; vnum tantùm/neq; duo data puncta:curuam lineam determinare ſufficiunt.

8 Aſſignatis quolibet tribus punctis:vnā tantum curuam per ea circūſcribere contingit.

9 pūctorum itaq; trinitas:prima eſt vniuſcuiuſq; curuę determinatio/atq; certitudo.

10 Vnde manifeſtum eſt,quo pacto tribus punctis/quolibet in plano aſſignatis/curuę p quodlibet eorū trāſeuntis centrū liceat inuenire. Eadem enim atq; aſſignatę portionis/aut circūferentię centri inuentio.

11 Tribus punctis/in eadem recta longitudine/extra lineam curuam:ſiue in eius ambitu/ſiue extra aſſignatis : fieri non poteſt/vt ab ipſis ad tria dictę curuę puncta/aut ad vnū aliquod:rectę lineę pducantur ęquales,et ęquidiſtantes/ ęquales autem contingit.



12 Totius curuę lineę/et omniū eius partiū/et punctorū: ęqualis eſt circa centrū extenſio,atq; vna.

13 Omnes curuę lineę partes/ſunt curuę.

14 Non contingit in rectas/curuam lineam diſſolui.

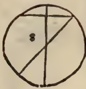
Mediarum.

1 Mediarum linearum extenſio:irregularis eſt/et inordinata.

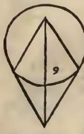
2 Medię lineę ſunt intermixtę:neq; quidem ſimpliciter rectę/neq; curuę:ſed et partim rectę/et partim curuę.

Circũferentiarum

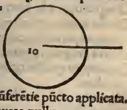
Nulla circũferentie puncta/ſunt actu:ſed omnia ſecundum potentiam. 1
Tota circũferentia:circũquaqꝫ ſuum centrum/equaliter ambit. 2
Ab eodē numero puncto ad idem:circa centrũ tota circũferētia p̄ducta eſt. 3
Circũferentie principium et finis:eſt idem numero punctum. 4
Circũferentia ſola:eſt linea perfecta/vndiquaqꝫ continua/et cui nichil ad perſectionem deeſt. 5



Circũferentie nulla recta linea/nata eſt ſubtēdi: eius copulans extremitates. 6
Sola circũferētia p ſe totum circũquaqꝫ ſpacium ſuo ambitu cōcludit/finitqꝫ figuram. 7
Si recta linea/ſuas vtrimqꝫ circũferentie applicet extremitates: a cuius equali medio/recta alia ſuper eam perpēdicularis per equalia diuidatur:erit cōmunis ſectio/date circũferentie centrum. 8



A dato extra circũferentie ambitũ pũcto:aut preter centrum/in eius ambitu: ab eodē ad tria circũferentie puncta/tres rectas equales p̄duci eſt īpoſſibile. 9

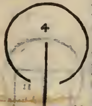


A date circũferentie cētro:recta linea extra eius ambitum/ſine ipſius ſectione minime protenditur. 10
A quolibet circũferentie puncto:linea ſiue interius/ſiue exterius producta:duos circa ſe angulos conſtituit. 11
Si circũferentie queuis linea/in medio aliquo ſui pũcto applicet̃: eadē ſecabit.eritqꝫ medio ipſius circũferētie pũcto applicata. 12
Omne circũferentie punctum eſt medium/extremũ vero nullum. 13

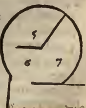
Circũferentie portionũ



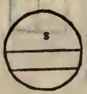
Omnis circũferentie portio:duobus actu punctis extremis clauditur. 1
Cuiuſlibet circũferentie portionis:principium et finis duo ſunt puncta actu diuerſa. 2



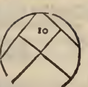
Impoſſibile eſt circũferentie portionem:ab eodem numero puncto/ad idem eſſe protenſam. 3
A centro cuiuſuis portionis:lineā rectam quãtũcũqꝫ ſine ipſius contactu/aut ſectione producere contingit. 4

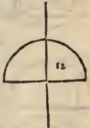


Recta linea extremo ſuo pũcto/portionis circũferentie extremitati cōiuncta:vnũ tantum circa ſe angulum conſtituit. 5
Si vero eadem linea extremo ſui/alterius medio:aut ſui ipſius medio/alterius extremo fuerit applicata: duos circa ſe et illam conſtituet angulos. 6
Qꝫ ſi eadem medio ſui puncto/alterius itidem medio applicetur:erunt quattuor anguli producti. 7



Omni portioni circũferentie:recta nata eſt linea(vt diameter aut chorda)ſubtendi/que eius copulat extremitates. 8
Soli circũferentie portioni/vnica recta addita/eius extremitates copulans:p̄fectum ac totum cum ea ſpacium claudit/facitqꝫ figuram. 9





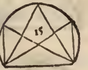
10 Si in date portionis arcu/due linee recte nō equidiſtantes cō ſiſtant: diuiſis vtriſq; per equalia/atq; a mediis equalibus/ duabus rectis perpēdiculariter eductis/ quouſq; ſibiinuicē occurrant: erit mutui earum occurſus aut ſectionis punctū date portionis circūferentie centrum.

11 Cuiuſlibet portionis/et ſue totius circūferentie: centrum eſt numero idem.

12 Si fuerit linea recta date portioni/et eius chorde perpendicularis: ipſam portionem/et eius chordam per equalia diuidet.

13 Cuilibet portioni/ad ſue circūferentie cōplementū: deeſt alia portio.

14 Hic ipoſſibile eſt circūferentie portionē/a ſua circūferētia: ſolo pūcto minui.



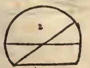
15 Si quotlibet anguli/in eadem circuli portione: ab extremis eius pūctis ducti/ ſuper arcum conſiſtant: erunt inter ſe equales.

Maioris portionis.



1 Ab vno extremorum maioris portionis punctorū/linea recta per eius centrū quātūlibet extēſa: ipſam portionem in circulū mediū/et eam quam ad eūdē obtinet differentiam reſoluit.

Maioris portionis/a media portione differētia: eſt arcus ipſa media portione minor. qua maior portio/mediam excedit.



2 Si differentia maioris portionis a media/ per equalia diuidatur: atq; a medio equali puncto recta linea p centrū/ad circūferentiā extendatur: ipſam maiorem portionē/in tres diuidet partes. in portionē quidē mediā/et duos arcus minores inter ſe equales. quorū vterq; erit totius differētie maioris portionis/a media medietas. eritq; ꝓtenſa linea/eiuſdē portionis diameter: ab eius chorda equidiſtans.

3 Si in maiori portione/anguli quotlibet ab extremis eius pūctis ſuper arcum conſiſtant: erunt acuti/et equales.

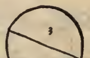


4 Si ab extremis maioris portionis punctis/linee recte ad eius centrū ducātur: intra ipſius portionis ambitum/ angulum intercipiēt/ angulo ad eius circūferentiam conſiſtenti/duplum.

Minoris

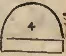
1 Minoris circūferentie portionis/ ſubtēta chorda: eius centrū extra ipſius ambitum relinquit.





2 Ab extremo minoris portionis pūcto/recta linea per eius cētrū quātūlibet in longū et rectū ꝓducta: haudquaq̄ ipſam portionem diuidit.

3 Si ab extremo minoris portionis pūcto/ducatur eius diameter: erit ipſius portionis/a media tota portione differētia: arcus ab altero extremo puncto circa eius centrū/ad alterū diametri punctum productus.



4 Si vero minoris portionis diameter/fuerit eius chorde equidiſtās: erit eius a media portione differētia/vterq; arcus vtriſq; extremis ipſius portionis pūctis: ad vtraq; diametri puncta/circa eius centrum productus.



Quotlibet anguli/in minori portione ab extremis eius punctis ſuper arcum 5
conſiſtentes:obtuſi ſunt/et inter ſe equales.

Ab extremis minoris portionis punctis:recte linee ad eius centrum pducte/ 6
angulum arcui circũferentie extrinſecum claudunt.

Medie



Circũferẽtie portioni medie recta ſubtẽta:p eius cẽtrũ trãſit/eſtq; diameter. 1

portio media:eſt totius circũferentie medietas. 2

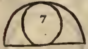
Extrema medie portionis pũcta maxime abinuicẽ ſecundum rectum diſtãt. 3



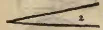
Quicũq; anguli/ab extremis medie portionis punctis ſuper eius arcum cõ= 4
ſiſtunt:recti ſunt/et inter ſe equales.

Si ab extremis portionis medie punctis linee recte ad eius centrum ducãtur: 5
erunt neq; intra ipſius ambitum/neq; extra deflexe:neq; continẽtes angulũ/
ſed ſibiinuicem directe et linea vna.

Media portio:eſt extremarum portionũ maioris/et minoris equalitas. 6



Si in medio portionis ambitu:tota vna circũferentia conſiſtens/eandẽ vna ex 7
parte in medio eius equali puncto cõtingat:& ex altera parte/eius diametrũ
in centro:erit media ipſa portio/toti huic circũferentie equalis.



Rectarum ad rectas

Si ab vno extremorũ linee recte punctorum/linea recta ad reliquũ eius punctũ 1
ducatur:erunt ambe ex toto coincidentes/et linea vna.

Impoſſibile eſt ab eodẽ puncto in idem punctum:diuerſas extẽdere rectas. 2

Quelibet recte linee diuerſe:aut omnino nullo ſuorum pũctorum/aut vnico 3
ſolo:ſibiinuicem applicantur/ſuntq; ſimul.

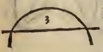
Nulla recta/cum altera vna itidẽ recta:ſpacium intercludit/continetq; figurã. 4

Omnes recte linee:ſunt ſimiles. 5



Recte ad curuas

Ab eodem puncto ad aliud idem punctum:rectam/et curuam producere cõ 1
tingit.



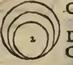
Impoſſibile eſt rectam et curuã:aliqua ipſarum parte ſimul coincidere. 2

Recta et curua:minus vno/et pluſq̃ duobus punctis/iter ſe communicare nõ 3
poſſunt.

Omni curue:recta omnis/eſt diſſimilis. E diuerſo curue ad rectam/vt et recte 4
ad curuam:eedem ſunt proprietates. Siquidẽ recte/ad curuam:et curue/ad
rectam iure atq; eſſentia eadem eſt habitudo:ſola ratione differens.

Curuarum ad curuas

Non omnes curue:ſunt inter ſe ſimiles aut equales. 1

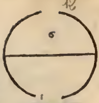


Contingit ab eodem pũcto/in idẽ punctum:curuas duas/aut plures eſſe pro 2
ductas.et ſimiles/et diſſimiles/et equales/et inequales.

Duas/aut plures quotlibet curuas:aliqua ſui parte cõmunicare/eſt impoſſibile 3

Contigit duas curuas/aut plures:et vno/et duobus ſui pũctis eſſe cõmunes. 4
tribus autem aut pluribus/minime.

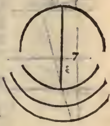
Si curua vna/alteri curue coniuncta:circa eius centrum eademq; longitudine 5



producta inuenitur:erunt ambe vna/et ad ſeinuicem directe.

6 Impoſſibile eſt curuas/circa diuerſa centra productas: aut circa idem/ſed diuerſis longitudinibus:ad ſeinuicem eſſe directas.

7 poſſibile eſt curuas circa diuerſa ꝓductas centra/ſed longitudinibus iiſdē/ac ſemidiametris equalibus:ſi demū ſimul iungātur/fieri vnā:et ſibiinuicem directas eſſe.



Directarum

1 Si duabus non equidiſtantibus rectis/eadem tertia eſt equidiſtans: erunt ex neceſſitate ſibiinuicem directe.

2 Si due recte linee quātūlibet in rectum ꝓtenſe/ſibi mutuo occurrant: nec altera ſuper alteram emineat:erunt directe.

3 Si due linee ſibiīuicē occurrētes/āgulū nullū cōplectanť:ſibiīuicē directe ſūt.

4 Neceſſe eſt lineas ad ſeinuicē directas/ſi in rectū quātūlibet extendanť: totis ſeipſis fieri cōmunicantes/et lineam totam vnam.

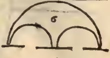
1

Duabus equidiſtans

Directe

5 Si directarum linearum oppoſita(iis quibus ſeſe reſpiciūt)pūcta/ per rectam copulentur:ea quidem erit vtriqꝫ coincidens/et vna.

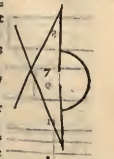
6 Si fuerint due linee ſibi mutuo directe:quecūqꝫ vni earū erit directa/et alteri.



7 Si ab extremo vnius directarū pūcto:recta linea/in partē alterius/faciēs angulum extendatur:ea quātūlibet in rectum ꝓducta/alteri nunq̄ occurret.

8 Si duabus rectis aliquo ſui puncto cōmunicātibus/recta in eodē pūcto ſuꝑueniēs:angulos ad vtrūqꝫ aut duos rectos/aut duobus ſolū rectis cōſtituat equales:erunt linee priores inter ſe directe.

Qꝫ ſi fuerint inter ſe directe:erit et tertia vtriqꝫ ſuperueniens/angulos vtroſqꝫ aut rectos/aut duobus rectis equales dirimens.

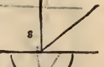


9 Si linee ſibi inuicem directe/aliquo ſui puncto cōmunicent:erit ſuꝑ id pūctū/ eadem vtriuſqꝫ perpendicularis inſiſtens.

10 Si duabus directis/eadem recta altero ſui pūcto cōmunicet : erūt vtreqꝫ inter ſe/eodem puncto cōmunicantes/atqꝫ linea vna.

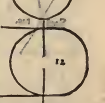
11 Si vtriſqꝫ directis/recta perpendiculariter inſiſtat:a cuius ſupremo pūcto/cōmuni oppoſito:ad extrema directarū pūcta cōmuni pūcto oppoſita/ ꝓtenſe recte fuerit equales : erūt vtreqꝫ directe/inter ſe equales. tertia vero recta/ex vtriſqꝫ confecta:equaliter diuiſa.

Qꝫ ſi fuerint equales:erunt et priores linee equales/ et linea ſuper inſiſtens ꝑpendicularis.



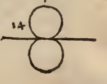
12 Impoſſibile eſt eandem rectam lineam vtraſqꝫ ſecare directas.

13 Quotcūqꝫ ſuper directas lineas/fuerint perpendiculares:ſunt equidiſtantes.



14 Si fuerint due linee recte/duabus circūferētiis eodē numero pūcto cōmunes: erūt ad ſeſe directe/et vtrāqꝫ vtrāqꝫ circūferentiā contingens.

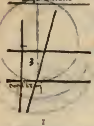
15 Si circūferentie portionis extremitatibus/due recte linee cōiuncte ſint et earū neutrā extēta quātūlibet eius chorda ſecet.: erūt vtreqꝫ ſibiinuicem directe. et portionis chorda:aut vtriuſqꝫ pars/aut tota ex vtriſqꝫ cōſtās/aut linea īter vtrāqꝫ media/vtriqꝫ directa. Qꝫ ſi fuerīt īter ſe directe:erit et portionis chorda/vtrāqꝫ e directo reſpiciens.



Omnino de directis ad ſeinuicem lineis/perinde atq; de vna:eadem eſt ꝓportio/parq; iudicium. ſuntq; linee directe/vt linea vna.

Oẽs vero directatũ linearũ proprietates:ex oppoſito de eleuatis/indirectiſq; lineis intelligantur.

Equidiſtans



Equidiſtantium

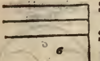
Impoſſibile eſt lineas equidiſtantes:figuram/aut angulum continere. 1

Impoſſibile eſt equidiſtãtes lineas:aliq̃ ſui parte/aut pũcto eſſe cõmunicãtes 2

Si duabus quibuſcũq; nullo ſui pũcto cõmunicãtibus rectis:tertia recta ſupueniens/duos ex vtraq; parte rectos/aut duobus rectis equales cõficiat angulos:erunt equidiſtantes. 3

Si fuerint due linee equidiſtantes: tertia recta vtriſq; ſupueniens/angulos ad vtramq; coalternos conſtituet equales. 4

Anguli coalterni dicũtur:quicũq; ſup eandẽ lineã duabus/aut pluribus intercidentẽ ad diuerſas equidiſtantes/ex aduerſis partibus ſunt facti.



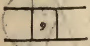
Si fuerit tertia recta/duabus rectis ſuperueniens:et anguli ſup eam coalterni/equales:erunt et due linee quibus ſuperuenit equidiſtantes. 5

Si due linee eidem fuerint equidiſtãtes/aut eadem duabus:et ipſe quoq; due equaliter abinuicem diſtabunt. 6

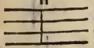
Si duarũ aut pluriũ linearũ/abinuicẽ diſtantiũ eadẽ fuerit perpẽdicularis:erũt equidiſtãtes. Q; et ſi equidiſtãtes fuerint:erit eadẽ vtriq; intercidẽs/ꝑpẽdicularis. 7



Si fuerit linea vna/alteri perpẽdicularis:et ab extremo eius puncto (quo non alteri cõmunicat)linea ad eã perpẽdicularis extẽdatur:erit extrema vltima ꝑpendicularis/linee prime perpendiculari ſubtenſe equidiſtans. 8



Quotcũq; linee recte vtriſq; equidiſtantibus ſine earũ ſectione vtroq; extremo perpendiculariter applicantur:inter ſe ſunt equales. 9



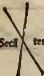
Si due equidiſtantes/perpendiculari circa eadẽ tertiã acceſſu ſibiinuicẽ applicentur:tote ſimul inter ſe/ſcdm totũ concurrent/fientq; linea vna. 10

In hoc mutuo equidiſtantiũ acceſſu:ſingula vnius pũcta/ſingulis alterius/et partes partibus/et totã toti ſimul neceſſe eſt applicari fieriq; vnã. 11

In eodem acceſſu:impoſſibile eſt alterã/alterã ſecare: aut eidẽ in vno tantum puncto applicari. De lineis inequaliter diſtãtibus:oppoſite proprietates/ex oppoſitorum proportione ſumende ſunt. 12

Secantium

Secantes



Si vnius linee punctũ medium medio alterius puncto adiaceat/ſitq; vnũ:erũt ſeinuicem ſecãtes. Q; ſi fuerint altera alterã ſecantes:erit vtriuſq; ex neceſſitate punctum medium idem. 1

Duarum linearum ſectio mutua eſt. atq; ſecans/ſecta:et ſecta/ſecans. 2

Omnis linea alteram ſecans:alterius partem/a parte intercipit. ſitq; inter eius partes/medio ſui puncto media. 3

Linea in extremis ſuis punctis diuidi/nulla poteſt. 4

Indiuiſibilis a diuiſibili/vt termini a ſua magnitudine itercíſio/ſectioue:nulla vnq̃ ſit. 5

6 Omnis duarum linearum cōmunis ſectio: indiuidua eſt atq; impers. et mediū vtriuſq; punctum.

7 Vnde lineas alternatim ſcd'm aliquā ſuī partē intercidere/ eſt impoſſibile.

8 Impoſſibile eſt linearum rectarū/ mutuam ſectionem: duo puncta eſſe.

9 Omnes recte ſe mutuo ſecantes: ſolo ſue interſectionis puncto cōmunicant.

10 Si circa idem punctū/ quattuor anguli conſiſtant: neceſſe eſt ſup ipſum/ duas lineas eſſe mutuo ſecātes. Q; ſi fuerint due linee mutuo ſecātes: neceſſe eſt circa ſectionis earū cōmune punctū/ quattuor angulos ex mutua earū intercisione actu factos eſſe.





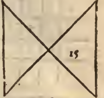
11 Quattuor angulorū qui circa cōmune ſectionis punctū conſiſtūt: neceſſe eſt duos et duos contra ſe poſitos/ inuicem equari.

12 Nulle linee mutuo ſecantes: aut directe ſunt/ aut equidiſtantes.

13 Impoſſibile eſt eādē rectam lineam: vtriq; mutuo ſecantiū eſſe directam/ aut equidiſtantem/ aut perpendicularem.

14 Si duarū rectarum perpēdicularis fuerit ſectio: erūt omnes quattuor anguli circa cōmune intercisionis punctum recti/ et equales.

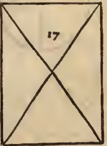
15 Si ſecantiū ſeinuicē rectarū/ due et due oppoſite extremitates duabus rectis lineis copulētur: que aut equales fuerint aut equidiſtantes: erūt et due priores mutuo ſecātes/ equales. Que ſi fuerint equales: erūt ecōuerſo predicte linee/ equales aut equidiſtantes.



16 Si omnibus rectarū ſeinuicē ſecantiū cōiunctis per rectas extremitatibus/ fuerint octo anguli facti omnes inter ſe equales: erunt et linee mutuo ſecantes equales/ et ſeſe perpendiculariter in medio equali puncto ſecātes. et omnes quattuor anguli/ circa mediū ſectionis punctū facti: recti/ et equales. Item et quattuor linee/ quibus linearū mutuo ſecantiū copulant extremitates: ſibi-inuicem equales/ et medij quadrati coſte. Et ediuerſo.



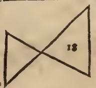
17 Q; ſi fuerit tantū quattuor/ et quattuor anguli ex aduerſo duo et duo poſiti/ equales: et primi quidē quattuor/ aliis quattuor ineq̄les: erūt et mutuo ſecātes linee equales/ et ī medio eq̄li pūcto vtreq; ſecātes: at minime ꝑpēdiculariter. Et figura quattuor extremis cōtenta: pallellogramus nō quadratus.



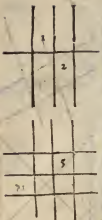
18 Si vero ex quattuor/ & quattuor: tantū duo et duo partis eiuſdē/ duobus et duobus aduerſe partis (et nō inter ſe) fuerint inequales: linee rurſus mutuo ſecantes/ erunt equales, verum ſeſe in medio inequali puncto ſecabunt.

Omnes aūt ſectionis duarū linearū modi/ ſunt duodecim. Nam aut linee ſūt equales/ aut inequales: aut equaliter/ aut inequaliter ſecantes: aut perpēdiculariter/ aut oblique: ex quibus modi duodecim colliguntur/ qui ſunt.

vtreq; equaliter/ perpendiculariter
vtreq; equaliter/ non perpendiculariter
vtreq; inequaliter/ perpendiculariter
Equales vtreq; inequaliter/ non perpendiculariter
altera equaliter/ altera inequaliter: perpendiculariter
altera equaliter/ altera inequaliter: non perpendiculariter.

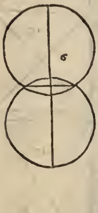


vtreqꝫ equaliter/perpendiculariter
vtreqꝫ equaliter/non perpendiculariter
vtreqꝫ inequaliter/perpendiculariter
Inequales vtreqꝫ inequaliter/non perpendiculariter
altera equaliter/altera inequaliter:perpendiculariter
altera equaliter/altera inequaliter:non perpendiculariter

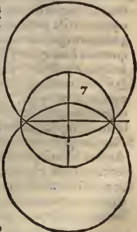


Perpendicularium

Omnis linea perpendicularis:eſt equaliter ſuper alteram inſiſtens. 1
Equaliter autē inſiſtit:cū neqꝫ ad dexterā/neqꝫ ad ſiniſtrā ſup aliam declinat.
Omniū linearum equidiſtantiū:eadem eſt perpēdicularis. At pluribus inter ſe perpendicularibus:nulla eadem eſt equidiſtans. 2
Si fuerit linea aliqua alicui ſecunde perpēdicularis/et alteri tertie equidiſtans: erit et ſecunda vtriqꝫ/prime et tertie perpendicularis. 3
Si fuerint quotlibet linee in longitudine equidiſtantes/et alie item plures in latitudine equidiſtātes:fueritqꝫ vna in longitudine equidiſtantiū/vni in latitudine equidiſtātiū perpendicularis/erūt & oēs omnibus perpendiculares. 4
Omnes linee perpendiculares ſunt mutue.vt quecūqꝫ alteri perpēdiculariter inſiſtit:eandem habet et ſuper ſe atqꝫ ad ſe perpendicularem. 5
Si circa aliqua duo date recte puncta duo circuli quātalibet longitudine producantur/alterutrū in duobus punctis ſecātes:erit recta linea vtriſqꝫ ſectionibus intercepta/date linee perpendicularis. 6



Si circa datum recte linee pūctum/circulus quātalibet longitudine deſcribať:circa cuius diametri (date linee cōtinue)extrema/rurſus et alij duo circuli qua libuerit longitudine fiant/ſeinuicem in duobus pūctis īterſecātes:erit recta linea vtriſqꝫ ſectionibus interſtes/ad datā lineam ab aſſignato in ea puncto/perpendicularis. 7

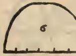


Obliquarum

Quando linea fuerit alteri oblique inſiſtēs/et quādo nō:et que linearum adinuicem obliquarū proprietates:ex perpēdicularium ꝓportione cognoſcendum eſt 1

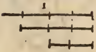
Rationalium

Omnem lineam:contingit eſſe rationalem. 1
Rationalis linea/ex ſeſe eſt indifferens:cuius differentia ex noſtra ſolum voluntate pendet. 2
Neceſſe eſt omnē rationalē lineā:aliquot numero partibus determiate ad placitū quātitatis/actu eſſe diuiſam.aut totā quidē indiuiſam/vt certam determinatamqꝫ ad placitū quātitatem(cuius quātitate cetere linee diuidantur)deſignari. 3
Omnis rationalis linea:eſt vt vnitas/aut numerus. 4
Per ſolā rationalē lineam : ceterarum quarūcūqꝫ proportiones cognoſcūtur 5



6 Rationalis linea: eſt media incognitarum linearũ menſura: omnibus ipſis definita ratione applicabilis.

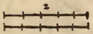
Commenſurabilium



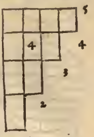
1 Si vtrãq; duarum linearum/rationalis linea aut alia quecunq; linea menſuret: erunt commenſurabiles.

2 Omnes linee equales: ſunt commenſurabiles.

3 Si due linee commenſurabiles/ſimul iungantur: erit vtraq; earum per ſe/toti compoſite commenſurabilis.



4 Si fuerint due linee inequales: quarum minor (quotiens poteſt) a maiore detracta nichil relinquat: aut eo qđ reſtat a miore detracto nichil relinquatur: aut hoc pacto continue a priori reſiduo/ poſteriori ſubſtracto (quotiẽs poteſt) ad id demũ ſubſtractionis ſeries alternata perducatur/ vt reſidui nichil ſit: erunt propoſite linee commenſurabiles. Qȝ ſi fuerint commenſurabiles: neceſſe eſt et hoc quod dictum eſt euenire.

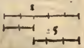


5 Quecũq; linea alteram menſurat/eiuſq; pars eſt: eidem eſt commenſurabilis.

6 Si fuerint due linee inequales/cõmenſurabiles: erit et earum differẽtia/vtriſq; commenſurabilis.

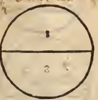
7 Omnes linee commenſurabiles inequales: inequalibus numeris (ſed equis determinate quantitatis partibus) diuiduntur.

8 De vnitate/et numero: idẽ putetur iudiciũ. eritq; linea vt vna: alteri equaliter multiplici/commenſurabilis.



Incommenſurabilium

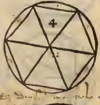
Quando vero due linee incõmenſurabiles/atq; incõmunicantes: facile eſt/ex oppoſitis cõmenſurabilium proprietatibus perpendere. Omnes enim incõmunicãtes/ſunt inequales. et quarũ vnius ab altera ſubſtractio/et reſiduorũ a reſiduis: infinita eſt/et inconſũmabilis. et ex q̃ reſidui ſemp aliquid manet. Et partẽ nullã cõmunẽ retinẽt: nec altera alterius pars eſt/alterũq; dimetiť. Et quaſquidem equaliter numeris nullis diuidi contingit.



Rectarum ad curuam

Diametri

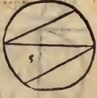
1 Omnis diameter: eſt linea in circũferẽtie/aut eius portionis ambitu maxima. Qȝ ſi in circũferentie/aut maioris/aut medie portionis ambitu linea maxima fuerit: eſt diameter.



2 Extrema diametri pũcta: in circũferentie/aut portionis ambitu maxime ſecũdum rectum diſtant.

3 Que diametri/ad diametrũ ꝓportio: eadẽ eſt et circũferentie/ad circũferẽtiã.

4 Secundum ſemidiametri quantitatem: omnis eius circũferentia/in ſex partes equales nata eſt diuidi.

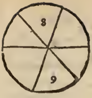


5 Impoſſibile eſt in eadem circunferentia/aut eius portione: ab eodem puncto diametros plures protendi.

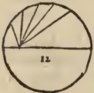
6 Cuiuſlibet diametri: eq̃le mediũ/eſt centrũ: ab extremis eius pũctis/eqdiſtãs

7 Diameter nec eam cuius eſt curuam ſecat: nec citra eandem deficit.

8 Omnes eiuſdẽ circũferẽtie/aut portionis diametri: ſunt equales/et ecõuerſo.



Complures eiuſdem curue diametri: quelibet/quālibet ſuper centrum equa= 9
liter ſecant. Qꝫ ſi in eiuſdē curue ambitu due aut complures recte/ad circū=
ferentiam vſqꝫ proteſe/vtraqꝫ vtrāqꝫ equaliter partiatur: erit earum quelibet
eiuſdem curue diameter.

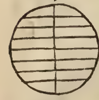


Vnde manifeſtum eſt a dato in curue ambitu(preter eius cētrum puncto)ad 10
circūferentiam: rectas duabus plures/inter ſe equales extendi non poſſe.

Omnis circūferentie diameter: eādem in duas partes diuidit equales. 11

Si a diametri inequali medio/linee quotlibet ad circūferentiam extendantur: 12
que ꝑ centrum tranſierit/omniū erit maxima. cui directa oppoſita/omnium
minima. que vero centro propiores: maiores. remotiores autem/minores.

13

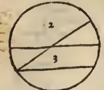


Si due eiuſdem curue diametri: perpēdicularibus angulis/altera alterā ſecet: 13
quotlibet rectas in eiuſdem curue ambitu/vni earum equidiſtātes reliqua ꝑ
equalia ſecabit.

Chordarum.

Omnis chorda: eſt diametro minor. 1
Atqꝫ omnis quoqꝫ recta: circūferentie(vtraqꝫ ex parte)applicata/ eius diame=
tro minor: eſt chorda.

Maioris/et minoris eiuſdem circūferentie portionis chorde: aut eedem ſunt/ 2
aut equales.



Impoſſibile eſt chordam/per centrum ſue portionis eſſe productam. 3

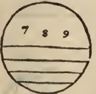
Impoſſibile item eſt chordā: ad extrema medie circūferentie portionis pūcta 4
protendi.

Minoris portionis chorda: eſt in ea maxima. 5

Totius circunferentie: chorda nulla eſt. 6

Impoſſibile eſt maioris portionis chordam: eiuſdem diametrum ſecare. 7

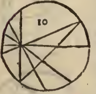
Nulla chorda: eſt ſuam portionem contingens/aut ſecans. 8



Quanto chorda maior: tanto minus differentes intercipit portiones. quanto 9
vero minor: tanto magis differentes.

Si in eiuſdē circūferentie ambitu/plures chorde eius diametrū ſecēt: ineq̄liter 10
eandē diuidēt. Atqꝫ rurſus earum nulla/aliarum vllam: equaliter/et ortho=
gonaliter interſecabit.

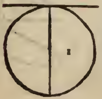
Si in eadē circūferētia/aut circūferentie portione: chorda vna/alterā ꝑ equalia 11
ſecet: ab eadem per inequalia ſecabitur.

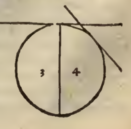


Contingentium.

Omnis duarum linearum contactus: in indiuiſibili/et puncto fit. 1

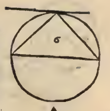
Si recta linea curuam contingat: et a contactu linea
perpēdiculariter in circūferentiā/ad pūctū pūcto 2
cōtactus oppoſitū ducatur: ea per centrū trāſibit/
eritqꝫ circūferentiam non ſecans et eius diameter.





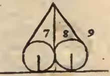
Omnis linea recta/ad contingentē in puncto con=
tactus directa: eſt et eandem curuam contingens. 3

Eandē rectā lineā/aut duas ad inuicē directas: curuā
eādē in duobus pūctis cōtingere nō poſſe ꝓbat. 4



5 Si a puncto contactus/perpendicularis ad contingentem in circũferentiã du=catur:erit exterior angulus omniũ acutorũ minimus/interior vero maximus

6 Si a puncto contactus due mutuo perpendiculares recte/ in circunferentiam deſcendãt:erunt equales /et totius circũferentie quarte partis/chorde. Extrema vero puncta quibus circũferentie occurrũt:erũt totius diametri fines.

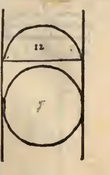


7 Si recta eadẽ duobus ſui punctis/duas contingat curuas:erunt a punctis cõtactus/ad vtrarũq; centra recte producte equidiſtantes

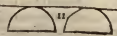
8 Si ab eodem puncto exeuntes due recte/eandẽ curuam contingant:erunt ex neceſſitate equales.

9 Si duas curuas/recta eadẽ eodẽ ſui puncto contingat:erũt et ſeſe cõtingẽtes.

10 Si recta eadem duas curuas/eodẽ ſui puncto contingat:et ab alio eius pũcto/ducta quãtũlibet in vtrãq; partẽ perpẽdicularis/ eaſdem rurſus ſed diuerſis in punctis cõtingat:neceſſe eſt eas aut actu/aut potẽtia eſſe equales. Curue autẽ potentia equales:ſunt portiones/circũferentiarum equalium.



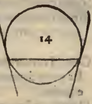
11 Si recta eadem diuerſis ſui pũctis/ aut eodẽ duas portiones vtraſq; in puncto equali earum medio contingat:erunt vtrarumq; chorde/ contingenti linee equidiſtantes.inter ſe vero aut equidiſtantes aut directe.



12 Si due recte circũferentie portionem in extremis eius punctis contingentes/ fuerint equidiſtantes:erit quam contingunt portio media.

13 Omnes due recte/curuã in terminis diametri contingẽtes:ſunt equidiſtãtes.

14 Si due recte portionem eandẽ in extremis eius punctis cõtingentes/diſtẽt inequaliter:et in partem quidẽ portionis magis/in partem vero qua portio a circũferẽtia deficit/minus:erit portio quam contingant maior. Si vero contra in partẽ portionis minus diſtent:et in eam qua deficit/magis:erit portio circũferentie minor.



15 Nulla recta/in circũferẽtie ambitu cõſiſtens eadẽ cõtingit.

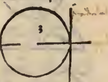
Applicantium.



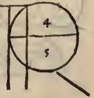
1 Applicãtis linee pars nulla:eius cui applicat curue ſinum/ambitumq; ſubit.

2 Nulla recta linea:duabus omnino extra ſe poſitis curuis/eodẽ ſui puncto applicari poteſt.

Omnino autem curue extra ſe poſite ſunt:que tote quidem extra ſeinuicẽ et actu et potentia collocantur.



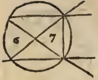
3 Si fuerit recta curue applicãs/ad eius diametrũ directa:atq; ab eo(quo applicat)puncto perpendicularis eidẽ ipſiq; diametro cõmunis producatur: hec erit curuam contingens.



4 Impoſſibile eſt rectam curue applicantem in extremo diametri puncto/eidẽ diametro perpendiculariter inſiſtere.

5 Impoſſibile eſt diuerſas rectas : quarũ altera alteri directa eſt/eidem curue in eodem eius puncto applicari.

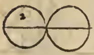
6 Si fuerint due recte eidem circũferentie diuerſis eius punctis applicantes : et



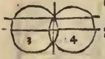
extrema earum puncta per rectam alteram cōiuncta/que angulos ad vtrāq;
relinquat equales:vtriſq; quantūlibet in circūferentiam productis/equales
eiuſdem circūferentie intercipient portiones.
Duarum adinuicem perpendicularium rectarū: eidem circūferentie applicā= 7
tium:neutram eius diametro directam eſſe neceſſe eſt.

Secantium

Omnis recta linea curue diametro/aut chorde directa: ipſam circūferentiam 1
aut actu/aut potentia ſecat.



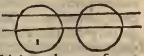
Recta linea duas circūferentias/quarum altera alteram contingit(tranſiens p 2
vtrarumq; centra)ſecans:aut vno tantum/aut duobus/aut tribus ſui pūctis
vtraſq; ſecat.



Que vero circūferentias ſe inuicē ſecantes/aut abinuicē diſtantes quomodo 3
libet ſecat:et tantū vno/et duobus/et tribus/et quattuor ſecare eas poteſt.
Si in vtriſq; duarū circūferentiarū ſectionibus/recta linea vtraſq; ſecat:non cō 4
tingit eādem/eaſdem in pluribus punctis ſecare. Qz ſi vtraſq;/ſolū in altero
mutue ſectionis puncto ſecat:in vtrāq; partem producta/in tribus punctis
(et his item ſolis)ſecabit.
Omnis linea curuam ſecans : partim intra eius ſinū/et partim extra conſiſtit. 5
neq; tota quidem exterius/neq; tota intus.
Omnis linea curue applicans:eſt eandē in potentia ſecans.que in rectum pro 6
ducta:ſubinde in actu ſecans efficitur.
Recta curuā ſecans:aut vno tantum puncto/aut duobus eandem ſecat. 7
Si recta curuam/vno tantū in puncto actu ſecat:eandem potentia/in duobus 8
punctis partietur.

Curuarū ad curuas.

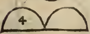
Equalium.



Omniū curuarum equaliū:diametri ſūt equales. 1
Et quarū diametri equales:et ipſe quoq; curue/
equales.



Contingit duas curuas:actu eſſe equales/et potētia inequales.et rurſus actu 2
inequales/potentia vero equales. Atq; iterum et actu/et potentia equales.
demum vero actu/et potentia inequales.



Omnes portiones eidem chorde/partibus ex aduerſis inſiſtētes:quarum ſu= 3
premi curuitatis apices/ab equali ipſius chorde medio equaliter diſtāt:ſunt
equales/et ſimiles. Supremus portionis vertex:dicit eius punctū/quod ma=
xime ab eius chorda diſtat.



Si duarū portionū:equales ſint chorde/et eque alti vertices erunt equales. 4
Omnes circunferentie equales/ſe contingentes aut ſecantes:ſunt inter lineas 5
equidiſtantes/et ecōuerſo. Circūferentie inter lineas equidiſtantes eſſe dicū
tur:cū vtraq; equidiſtantiū quātūlibet in rectū producta:circūferentiarum
vtramq; contingit.

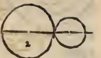
Inequalium



Quando autē et circūferentie inter ſe/et earum portiones fuerint inequales: 1
continuo ex equalium proprietatibus cognoſcūtur. Quarum enim ſunt in=

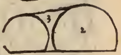
equales diametri: ſunt et inequales. Et circũferentie ſe contingentes aut ſe=
cantes: quarũ linee vtraſq; contingentes non equaliter diſtant. Et portiones
eidem aut equalibus chordis inſiſtentes inequalium altitudinum.

Similium

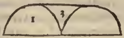


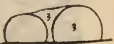
1 Omnes cirũferentie et medie portiones: inter ſe ſunt ſimiles.

2 Si duas circũferentias recta linea earum centra permeans diuidat: erunt due
vtriuſq; portiones inter ſe eq̃les et ſimiles: et rurſus duabus alterius ſimiles.
Atq; omnium quattuor: quelibet cuilibet ſimilis.



3 Omnino autẽ ſimilitudinis diſſimilitudinis
equalitatis et inequalitatis curuarũ portio=
num: quattuor ſunt modi. Aut enim equaliũ
chordarum et altitudinũ ſunt. aut chordarũ
quidem equaliũ et inequaliũ altitudinũ. aut contra inequalium chordarum
altitudinũ vero equalium. Aut demũ et chordarum et altitudinũ inequaliũ.
Rurſus vero aut equales et ſimiles ſũt. aut equales quidem ſed diſſimiles.
aut contra ſimiles at inequales. Aut deniq; inequales atq; diſſimiles.





4 Omnes due curue equaliũ chordarum et altitudinũ: equales ſunt et ſimiles.
et econuerſo.



5 Impoſſibile eſt equalium chordarum et altitudinum inequalium curuas: eſſe
equales aut ſimiles.

6 Nec rurſus inequalium chordarum altitudinũ vero equaliũ curue: aut equa=
les aut ſimiles eſſe poſſunt.

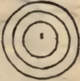
7 Vnde omnes equalium chordarum et altitudinũ inequalium: aut econtra in=
equalium chordarũ altitudinũ vero equaliũ: et inequales & diſſimiles ſunt.

8 Inequaliũ chordarũ et altitudinũ curuas: equales et ſimiles eſſe eſt ipoſſibile
Eas tamẽ equales et diſſimiles: aut ſimiles quidẽ ſed iequales eſſe cõtingit.

Diſſimilium

Que vero curue et quando diſſimiles: ex ſimilium proportione liquet.

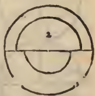
Eiuſdem centri.



1 Omnes concentrice circũferentie: circumquaq; equaliter abinuicem diſtant.

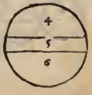
2 Omnes vero concẽtrice portiones: aut ſibiinuicẽ directe ſunt: aut in actu vel
potentia equidiſtantes.

3 Omnes concentrice curue: circũquaq; a ſuo cẽtro equidiſtant. verum nõ eidẽ
centro: omnes eque propinque ſunt.

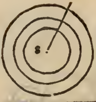


4 Omnes concẽtrice portiones vtroq; extremo ſui pũcto cõiuncte: ſunt vnius
circũferentie partes et actu totam perficientes circũferentiam.

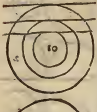
5 Que vero concentrice altero dũtaxat ſui puncto iunguntur: ſunt et circũfe=
rentie eiuſdem partes, ſed quibus ad totius cõplementum: tertia alia portio
vtriſq; concentrica deeſt.



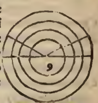
6 Si due (eiudem circũferentie) concentrice portiones nullo ſui puncto copu=
lantur: due alie totius perfectioni neceſſarie ac vtriſq; concẽtricis cõcẽtrice
portiones deſunt.



Circūferentias equales:eorūdem eſſe centrorum impoſſibile eſt. 7
Omniū curuarum eodem cētro cōmunicantiū/eadem eſt perpendicularis: et 8
que quātūlibet producta. per omniū earum centra tranſit.

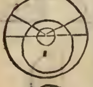


A cōmuni pluriū circūferentiarū centro:exeūtes due recte 9
omnibus perpēdiculariter occurrūt. quarū ſi altera/alteri
directa eſt:erunt diſtincte omniū portiones/medie. Si ve
ro altera/ad alteram angulum claudit:erunt hinc et hinc/
omniū circunferentiarū portiones: in eandem partem/ab
vtriſq; rectis intercepte ſimiles. Et portiones quidē vnius
partis/maiores:alterius vero minores.

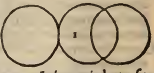


Nulla eadem recta:duas/aut plures eiuſdem centri curuas contingit.ſed que 10
eſt interiorum contingens:exteriores aut actu/aut poteſtate ſecat.

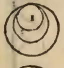
Diuerſorum centrorum



Que autem curue diuerſorum centrorum:op 1
poſita centro eodem participantium ratio/fa
cile edocet.veluti circūferentie omnes extrin
ſece/et intrinſece non equidiſtantes.ſiue inter
quas dabilis eſt recta:vni quidem earum per=



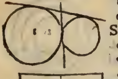
pendicularis/alteri vero obliqua.porro portiones eccētrice:perinde atq; ſue
circūferentie/cognoſcuntur.verum multifariā circūferentias(quarum altera
alteram ambit/eccētricas/centriſq; diſſidētes eſſe cōtingit. Nam aut minor/
maioris ambit centrum:aut ſuper ipſum trāſit.aut neq; ambit/ne q̄ p ipſum
meat.et rurſus his modis omnibus:aut eadē minor/maiorem contingit:aut
ab eadem diſtat.



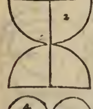


Contingentium.

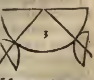
Si curua vna/alteram contingat:fueritq; recta linea diuerſis ſui punctis vtrāq; 1
contingens/cuius pars vtriſq; contactuū punctis intercepta per equalia di=
uidatur:erit recta linea a pūcto medie ſectionis ad vtriuſq; curuarū cōtactū
educta/vtramq; curuam contingens.

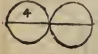


Si duarum portionū contactus fuerit equale vtriuſq; medium/erunt earum 2
chorde equidiſtantes.et recta eadem/a contactu in vtrāq; partē egrediens:
vtriſq; et curuis/et earum chordis perpēdicularis : equaliter rurſus vtramq;
diuidens.

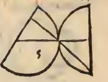


Si due curuarū portiones/ſeinuicē vtraq; vtrāq; mediis in= 3
equalibus contingant:aut altera quidē equali/altera vero
inequali:erit chordarū vtriuſq; obliqua/atq; inequalis di
ſtantia. A contactu vero recta quantūlibet in vtrāq; partē
producta/vtriſq; portionibus perpēdicularis : aut neutri
chordarum/aut alteri tantum perpendiculariter incidet:eādem mediis par=
tibus/equaliter ſecans.





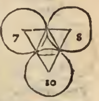
Quomodolibet due curue/altera alteram contingant:erit recta linea/vtriuſq; 4
cētro applicata:per punctum contactus tranſiens/et vtriq; perpendicularis.
Qꝫ ſi hoc pacto a contactu recta vtriq; perpendicularis/ in vtramq; partem



educta ſit: vtriuſqꝫ centrum neceſſario offendet.

5 Vnde fit vt quecūqꝫ recta vni contingentiū curuarū (a contactu) perpendicu= lariter inſiſtit: et alteri. et que non vni earum perpendicularis/ neqꝫ alteri.

6 Curua vna/ curuam alteram contingens: eādem vno tantum in puncto con= tingit.



7 Si trium curuarum extra ſeinuicem cōſiſtentiū/ quelibet quālibet contingit: erunt omnium trium contactus: tria neceſſario puncta.

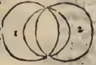
8 Si poſitas contra ſe duas curuas/ tertia curua contingat: in diuerſis punctis contingit.

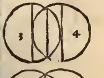
9 Contingit infinitas numero curuas (quarum altera alteram ambit) ſeſe eodē in puncto contingere.



10 Si fuerint tres curue/ extra ſe poſite ſe contingētes: tria vero contactuū pūcta tribus rectis lineis copulentur/ atqꝫ he fuerint equales: erunt et tres ſe cōtingentes circūferentie/ equales. tres quoqꝫ arcus/ tribus contactuum punctis intercepti: equales/ et econuerſo. Qꝫ ſi dicte linee inequales: erunt et ſeſe cō tingentes curue/ inequales. atqꝫ rurſus viceuerſa eueniet.

Secantium

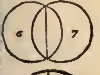




1 Si circunferentia vna/ alteram ſecet: neceſſe eſt in duobus pūctis ſecare. vno vero tantū aut pluribus impoſſibile.

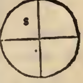
2 Si curua/ alteram in duobus ſecet punctis: fueritqꝫ tertia/ per vtraqꝫ ſectionis puncta tranſiens: erit vtrāqꝫ/ in eiſdē punctis ſecans.

3 Omnes curue alternatim ſecantes: eccentrice ſunt.



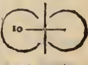
4 Equalium circūferentiarum/ ſeinuicem ſecātium arcus: vtriſqꝫ punctis ſectio= nis intercepti/ inter ſe: pariter et reſidui/ inter ſe: equantur.

5 Impoſſibile eſt equales circūferētias: in vtriſqꝫ terminis ſue diametri/ alteram alteram ſecare.

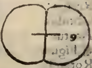


6 Si circunferentie ſe ſecent equales: impoſſibile eſt vtriuſqꝫ/ vtraſqꝫ: aut vnius/ vnam ſectionum portionē eſſe mediam. At altera vtriuſqꝫ ex neceſſitate maior: altera vero minor erit.

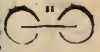
7 Vnde fit vt recta linea: vtraqꝫ ſectionis circūferentiarum equalium puncta cō tinuans/ ſit vtriuſqꝫ diametro minor.



8 Due portiones medie equales/ ſuis vtriſqꝫ extremis coniuncte: nullo pacto actu/ aut potentia ſeinuicem ſecant.



9 Quarūcunqꝫ portionum centra/ minus coniunctis vtriuſqꝫ ſemidiametris diſtant: erunt ſeinuicem aut actu/ aut potē tia ſecantes.

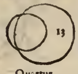


10 Quarum autem centrorum diſtantia eſt vtriuſqꝫ diameter coniuncta: aut actu ſe/ aut potentia contingunt.

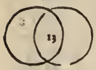
11 Qꝫ ſi vtrorumqꝫ centrorum diſtātia/ ſit vtriuſqꝫ diametro maior: erit omnino neutra neutram ſecans/ aut contingens: at vtreqꝫ/ abinuicem diſtantes.

12 Si curua vna/ alteram in vtriſqꝫ ſue diametri punctis ſecet: inequales erunt, et

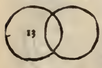
Secūdus et quintus



Quartus

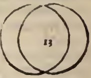


Tertius et vltimus



minor quidem que in punctis ſue diametri/ab altera ſecta eſt.
Omnino autē ſectionis circūferentiarum/multi ſunt modi.
Aut eni vtriuſqꝫ centrum : vtriuſqꝫ circunferentia ambit.
aut altera tantum/alterius centrum ambit.aut neutra.aut
rurſus vtraqꝫ/alterius centro applicatur.aut altera tãtum/
aut deniqꝫ neutra:ſed vtriuſqꝫ centrū citra alterius ambi=
tum/ductumqꝫ manet.

Primus modus 13



Geometrici introductorij quarti libri finis

GEOMETRICI INTRODVCTORII
liber quintus De ſuperficiebus.

¶Superficies
Ad ſe
Ad alterum
¶Ad ſe
plana
Orbicularis
Inequalis
¶plana
Angulus
Figura
¶Angulus
Rectilineus
Inflexus
Medius
¶Rectilineus
Rectus
Obtuſus
Acutus
¶Inflexus
Concauus
Conuexus
Mixtus
¶Medius
Rectus
Obtuſus
Acutus
¶Figura
Rotunda
poligonia
¶Rotunda
Circulus

Trigonus
Tetragonus
penthagonus
Hexagonus
¶Trigonus
Iſopleurus
Iſoſceles
Scalenus
Orthogonius
Ambligonius
Oxigonius
¶Tetragonus
parallelogrāmus
Quadratus
Altera parte longior
Rhombus
Rhomboides
¶penthagonus
Equilaterus
Equiangulus
Vniformis
Egrediens
¶Hexagonus
Equilaterus
Equiangulus
Vniformis
Egrediens
¶Orbicularis
Sphere
Columne
¶pyramidis

Ad planam plana
Ad orbicularem plana
Ad orbicularem orbicularis
¶Ad planam plana
Directa
Diſtans
Inſiſtens
Secans
Communicans
Incommunicans
¶Diſtans
Equaliter
Inequaliter
¶Inſiſtens
Orthogonaliter
Oblique
¶Ad orbicularem plana
portionis baſis
Applicata
¶portionis baſis
Maioris
Minoris
Medie
¶Applicata
Contingens ſolum
Secans
¶Secans
Actu
potentia tantum
¶Orbicularis ad orbicularē
Equales.

¶poligonia	perfecta	Inequales
Equilatera	Imperfecta	Similes
Equiangula	¶Imperfecta	Diſſimiles
Equilatera	portio maior	Concentrice
et equiangula	Minor	Eccentrice
Vniformis	Media	Contingentes
Egrediens	¶Ad alterum	Secantes

Diffinitiones

Quid ſuperficies:ex prioribus notum eſt.

Quid vero ſuperficies ad ſe/et ad alterum:vt et linea cognoſcendum.

Plana ſupficies



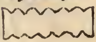
Superficierum ad ſe

Superficies plana: eſt ſuperfities a linea/ad lineam breuiſſime extenta.

Sup̃ficies circularis

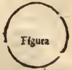


Supficies inequalis



Orbicularis ſuperficies:eſt que circa pūctum aliquod/aut lineam equaliter protenditur.

Inequalis vero ſuperficies:eſt cuius extēſio inequaliter aut per ſe/aut circa punctum lineāue ſuccedit.



planarum

Angulus eſt plana ſuperficies:quam vna ex parte duarum linearū contactus excipit/finitq;.

Figura eſt ſuperficies plana:que termino vno/vel pluribus clauditur.

Inflexus

Rectilineus. Medius.



Acutus

Rectus. Obtuſus

Angulorum

Angulus rectilineus:eſt qui duabus rectis lineis continetur.

Inflexus vero: quem due curue excipiunt.

Medius autem:quem altera quidem recta/altera vero curua continet.

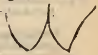
Rectilineorum

Angulus rectus rectilineus:eſt quem due recte excipiunt/adinuicem perpēdiculares.

Obtuſus vero:qui eſt recto maior. Acutus autem:qui recto minor eſt.

Inflexorum

Cōcauus Mixtus



Cōuexus

Angulus inflexus concauus: eſt quem mutua ſeſe concauitate reſpicientes/ vtreq; definiunt curue.

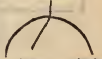
Curuarum concauitas:eſt ea ipſarum facies/quam verſus inflectuntur.

Oppoſita vero earum facies:dicitur conuexa.

Angulus cōuexus:eſt qui vtriſq; curuis conuexū mutuo habētibus aſpectū finitus eſt.

Mixtus vero:eſt qui contrarie ſe reſpicientibus curuis/clauditur.

Rectus



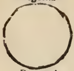
Acutus Obtuſus

Dicuntur autē curue cōtrarios habere aſpectus:cum facies alterius concaua/ alterius conuexam reſpectat/atq; intuetur.

Mediorum

Medij vero anguli rectus/obtuſus/et acutus: ſecūdum proportionem rectilineorum/diffiniendi ſunt.

Agonia



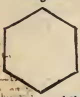
Poligonia



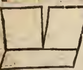
Pēthagonus



Vniformis Exagonus



Quadratus Rhōbus



Rohmboides

Parallelogramus altera parte lōgior

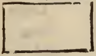


Figure agonie

Rotūda figura dicitur:quecūqꝫ angulis/et lateribus caret. poligonia vero:q̄ plures angulos/pluraqꝫ latera participat

Circuli

Circulus/rotunda eſt figura:cuius mediū punctū eſt cētrū circunquaqꝫ ab extremis equidiſtans. per ſimilitudinem autē centri circuli:in poligoniis quoqꝫ figuris/is punctus centrū dicitur:qui ab omibus earū angulis/mediiſqꝫ lateribus equidiſtat.

Figure poligonie

Equilatera figura:eſt cuius omnia latera/ęqua ſunt.

Equiangula verò:cuius oēs anguli/ſunt ęq̄les. Æquilatera autę et ęquiāgula:cuius & oēs anguli/et ſingula latera ſūt ęq̄lia. Figura vniformis dr̄:cuius nō latera ſeinuicē ſecāt.

Egrediens vero:q̄ mutuo ſecātibus ſeſe lateribus/claudit̄.

Trigonus:eſt figura tres āgulos/ac totidē latera pticipās.

Tetragonus vero:q̄ quattuor. pēthagonus:quinqꝫ. Hexagonus vero ſex. Et hoc pacto heptagonus/ octogonus/ ennagonus. Et cetere deinceps poligonie figure diffiniende ſunt. laterū eni/angulorūqꝫ multiplicatio:infinita eſt.

Quocirca et figure poligonie infinita ſerie ſuccedunt.

Trigonorum

Yſopleurus eſt trigonus:cuius tria latera/ſunt equalia.

Yſocheles vero:eſt qui duo tantū latera/equalia participat.

Scalenus:qui tria habet inequalia.

Orthogonius vero:trigonus eſt cuius trium angulorum/ vnus eſt rectus.

Ambligonius:qui angulum vnum/habet obtuſum.

Oxigonius autem:qui acutos angulos obtinet omnes.

Tetragonorum

Tetragonus parallelogramus : eſt cuius quelibet oppoſita latera equaliter diſtant.

Trapeȝus vero cuius tātum duo oppoſita latera/aut nulla equidiſtantia ſunt.

parallelogramorum

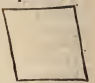
Quadratus eſt parallelogramus:eqlaterus/et equiāgulus

Altera parte longior:eſt qui omnes habet rectos angulos. latera vero non omnia:ſed oppoſita tantum equalia.

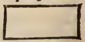
Rhombus eſt parallelogramus:quattuor equis lateribus/ ſed inequalibus angulis contentus.

Rhomboides vero eſt rhombo ſimilis figura:oppoſita tātum latera/atqꝫ oppoſitos angulos equales obtinens.

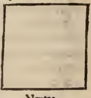
Equilatera tantū



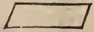
Equiangula tantū



Eqlatera et eqangula.



Neutra

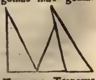




Iſopleurus Iſocheles Scalenus



Orthogonius Oxigonius Ambligonius



Trapezus Trapezus



penthagonorum

penthagonus equilaterus:eſt cuius omnia quinqȝ latera ſunt equalia. Equiangulus vero:cuius quinqȝ omnes anguli/ſunt equales. penthagonus vniformis dicitur:cuius latera non ſe mutuo intercidunt. Egrediens vero:cum eius latera/ſeinuicem ſecant.

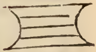
Hexagonorum

Hexagoni equiãguli:equilateri/vniformis/atqȝ egrediũtiũ angulorũ:perinde atqȝ pẽthagoni dicuntur.

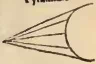
Orbicularium

Orbicularis ſphere ſuperficies:eſt cui recta linea/nulla ineſt. Columne vero in qua omnes recte linee(que inſunt eidem)ſunt equidiſtãtes. pyramidis autẽ/in qua oẽs recte linee in alterã partẽ ꝓducte:tandẽ cõcurrũt. Orbicularis ſuperficies perfecta: eſt cuius extrema(quibus vndiqȝ in orbem tendit)ſunt numero eadem/actuqȝ vnũ. Imperfecta vero cuius orbicularia extrema:actu duo ſunt.aut ad cuius complementum/aliqua deeſt portio.

Columne



Pyramidis



Imperfectarum

Superficiei orbicularis portiones maior/minor/et media:ſecundũ proportionem portionum circũferentie diffiniantur. Eſt enim orbicularis ſuperficies: curue linee proportionabilis.perfecta quidem/toti circũferẽtie: imperfecta vero/eius portionibus.maior/maiori:miori/minor:media vero medie. Atqȝ rurſus curuarũ linearum centrum:orbicularium ſuperficierum axi/proportionabiliter reſpondet. Nam quemadmodum curua linea/equaliter circa cẽtrum tendit:ita et omnis orbicularis ſuperficies/circa ſuum axem. Eſt autẽ orbicularis ſuperficiei axis:recta linea/in ea longiſſima.circa quã ipſius equaliter ambitus protenditur. Bifariam vero in orbicularibus ſphere/atqȝ pyramidis ſupficiebus:eſt ſumere portiones/orbicularesqȝ imperfectas. Imperfecte ſiquidẽ ſphere ſupficies: aut altera ſolum parte a tota deficiũt/ahenis ſimiles. Aut vtraqȝ parte:ſed perfectam rotunditatẽ obtinent.qualẽ in celo zodiacũ/aſtronomi effingũt. Aut imperfecta rotunditate diuidũtur:qualis zodiaci medietas. pyramidis vero rotunde/ſuperficies imperfecte:aut ſolã rotunditatem habent imperfectam/proprio cono perfecte.aut contra/perfecta quidem rotunditate conſtant: cono ac vertice deficientes. aut vtriſqȝ priuantur/vtrimqȝ imperfecte:incomplete quidẽ rotunditatis/ſimulqȝ verticis inacceſſi. At rotundarum ſuperficies colũnarum: dumtaxat qꝫ integrã minime obtineant rotunditatem/imperfecte dicuntur.

Superficierum ad alterum

Vniuerſa ſuperficierum ad alterum conſideratio: linearũ ad alterum ſcientie/omni ex parte equa proportione reſpondet. Sunt enim linearũ ad lineas ſingula/et pleraqȝ linearum per ſe/abſolutaqȝ ratione dictarum:ſingulis ſuperficierum ad ſuperficies/aut abſolutarum dictarumqȝ ad ſe/ ꝓportionabilia. Nam quod in primo magnitudinũ gradu linea: hoc gradu ſecundo ſuperficies eſt.et quod pũctum(linee terminus)ad lineam:hoc idem linea(ipſius ſuperficiei terminus)ad ipſam ſuperficiem/ratione pari exiſtit.

Quecūq; igitur de lineis alterne ſeſe reſpicientibus/dicta ſunt: paria in totum et nūc quidem de ſuperficiebus alternatim ſumptis/alternaq; ratione adinuicem collatis: intelligantur eſſe dicta. Vtrorūq; enim par eſt determinatio. Que autē linearum/et ſuperficierū mutua proportio/quiſue ſingulorum ad ſingula reſponſus: ſequens formula declarat.

¶ Linea	¶ Superficies
per ſe	per ſe
Ad alterum	Ad alterum
¶ per ſe	¶ per ſe
Recta	plana
Curua	Orbicularis
Media	Inequalis
¶ Curua	¶ Orbicularis
Tota	perfecta
portio	Imperfecta
¶ portio	¶ Imperfecta
Maior	Maior portio
Minor	Minor
Media	Media
¶ Ad alterum	¶ Ad alterum
Recta ad rectam	Ad planam plana
Recta ad curuam	Ad orbicularem plana
Curua ad curuam	Ad orbicularem orbicularis
¶ Recta ad rectam	¶ Ad planam plana
Directa	Directa
Diſtans	Diſtans
Inſiſtens	Inſiſtens
Secans	Secans
Communicans	Communicans
Incommunicans	Incommunicans
¶ Diſtans	¶ Diſtans
Equaliter	Equaliter
Inequaliter	Inequaliter
¶ Inſiſtens	¶ Inſiſtens
Orthogonaliter	Orthogonaliter
Oblique	Oblique
¶ Recta ad curuam	¶ Ad orbicularem plana
Diameter	portionis medie baſis
Chorda	Maioris minoriſq; baſis

Contingens	Contingens
Applicans	Applicata
Secans	Secans
¶Curua ad curuam	Orbicularis ad orbicularem
Equales	Equales
Inequales	Inequales
Similes	Similes
Diſſimiles	Diſſimiles
Concentrice	Concentrice
Eccentrice	Eccentrice
Contingentes	Contingentes
Secantes	Secantes
¶Secantes	¶Secantes
Actu	Actu
potentia ſolum	potentia tantum

Diffinitorum proprietates.

Superficiei

1 Superficies eſt latitudo: cui preter id quod eſt, duplices termini (pūcta quidē et linee) inſunt.

2 Quelibet ſuperficiei pars: eſt ſuperficies, nulla autem linea, aut punctum.

3 Quicquid ſuperficiei, preter ſuperficiem ineſt: aut punctum, aut linea eſt.

4 Omnis ſuperficies: eſt ex potentia infinitis ſuperficiebus, compoſita. Et cuilibet quidem ſuperficiei: ſuperficies inſunt, potentia infinite.

5 Superficiei per ſe et ad alterū dicte proprietates: vt et linearū, ſumende ſunt.

planarum

1 Nulla plana ſuperficies: ſuper punctū aliquod, aut lineam vllam protēditur.

2 Ab aliquo plane ſupficiei pūcto: ad tria exteriora alterius equidiſtātis ſuperficiei pūcta: aut cōtra a tribus extrinſecus aſſignatis equidiſtātis ſuperficiei pūctis: ad idē date ſupficiei plane pūctū, tres rectas equales impoſſibile eſt protēdi. Et eādē ꝓpoſitionē: de tribus eiuſdē plane ſupficiei lineis, itellige.

3 Superficies plana: tota equaliter, in omnibus ſuis lineis protenditur.

4 Ab aſſignata linea: quotlibet planas ſuperficies, educere contingit.

5 Vnde fit vt vnius tātum linee aſſignatio: planam ſuperficiem infinitam, indeterminatamqꝫ relinquat.

6 Inter duas lineas, aut plures: vna tantum plana ſuperficies conſiſtit.

7 Due itaqꝫ linee: primum rectam lineam definiunt, reddūtqꝫ finitam.

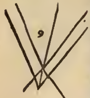
Orbicularium

1 Cuiuſlibet orbicularis ſuperficiei, medie linee: extremis ſupereminent.

2 Contingit a tribus orbicularis ſuperficiei punctis, ad idē extrinſecū punctū: tres aut rectas quidem lineas, aut planas ſuperficies extendere. Hoc vero punctum: eius centrum eſſe neceſſe eſt.



Orbiculari ſuperficiei/ſecundum ipſius orbem:recta linea nulla ineſt. 3
Datis duabus lineis:inter vtraſq;/orbiculares ſuperficies infinite cadunt. 4
Tribus vero aſſignatis:vnam tantũ inter tres/orbicularẽ ſuperficiem deſcribi 5
contingit.
Vnde fit vt due linee:orbicularẽ ſuperficiem definiãt nullam/tres vero eãdẽ 6
definiant.

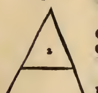


Angulorum

Contingit omnem angulum:ſuperficiem eſſe indefinitam. 1
Si linea vtriſq; anguli lateribus applicetꝰ/eorũ neutrũ ſecãs:angulũ cõtingit. 2
Angulus:eſt figure principium. 3
Nullus ſimplex angulus:eſt figura. 4
Contingit omnem angulum:linee additione/fieri figuram. 5
Vna tantum linea:nullius eſt anguli capax. 6
Si vtriſq; anguli lateribus/recta linea ſubtendatur:erit totius anguli baſis.cui 7
oppoſitus punctus:eiuſdem vertex/conuſq; exiſtit.



Cuiuſlibet anguli ſpacium:duobus rectis angulis minus approbatur.Vnde 8
fit vt linee adinuicẽ directe:nõ capiant angulum/et quecũq; angulũ capiũt:
non ſunt directe.
Impoſſibile eſt vtriſq; anguli lateribus/eandem inſiſtere perpendicularẽ:aut 9
duas perpendiculares/adinuicem directas/aut equidiſtantes.

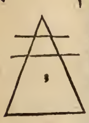


Figurę

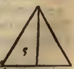
Omnis figura:eſt omniquaq; actu finita. 1
Omnis linea/a pũcto intra figurã ſignato : ad punctũ extra eãdem collocatũ/ 2
producta:ipſius figure latera/aut angulos/ipſamq; ſuperficiem ſecat.

Rectilinei anguli

Rectilineus angulus:eſt poligoniarum figurarum principium. 1
Si rectilinei anguli/latera fuerint equalia:erunt vtriq; anguli/ad ſubtentã eidẽ 2
baſim equales. Qz ſi vtraq; eius latera/in rectum tendãtur:fient et ſub baſi
alij duo anguli equales/et econtra.



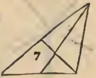
Si vtriſq; rectilinei anguli lateribus/rectę quotlibet incidant:fuerintq; duę/et 3
duę laterũ portiones angulũ verſus relictę ęquales:erunt omnes interiores
anguli/ſuper incidẽtes lineas collocati:duo/et duo ex eadem parte oppoſiti/
ęquales.Similiter et exteriores/ex oppoſito correſpondentes:ęquales.
Ois recta linea/vtraq; anguli latera ꝑ ęqualia ſecans:eſt eius baſi ęquidiſtans. 4
Si ab anguli vertice/recta linea ad ęquale ſuę baſis medium pro= 5
ducta/eidẽ baſi orthogonaliter inſiſtat:erũt vtraq; anguli la=
tera ęqualia/ipſaq; linea datum angulum per ęqualia ſecabit.
et èconuerſo.





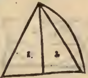
Si verò recta linea ab anguli dati vertice/ad ęquale ſuę baſis me= 6
dium deſcẽdens/eidẽ ad impares angulos occurrat:extẽta verò ad inęquale
baſis medium/fuerit eidem perpendiculariter inſiſtens: erunt dati anguli la
tera inęqualia.Et rurſus vice verſa eueniet.

7 Si dati anguli latera ſint inequalia: eiſdem ad equalitatē reſolutis, ac ſubtenta vtriqꝫ baſi: erit vt recta linea, ab anguli vertice ad eādem baſim perpendiculariter educta: datum angulum, equaliter partiatur.



Inflexi

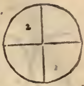
1 Omnes anguli rectilinei, proprietates: pari proportione et inflexo angulo regulari conueniūt. Dicitur autem regularis: vt quē quidem ſimiles equaleſqꝫ curue claudunt. Nam quicūqꝫ diſſimilibus, et inequalibus curuis continentur: vt plurimū ſunt irregulares.



Medij

1 Si a medij vertice anguli recta linea equali ſue baſis medio incidat: datum angulum inequaliter, impariterqꝫ diuidet.

2 Curuo medij anguli lateri chorda ſubtenta: reliquo cū recto latere, rectilineū angulum claudit.

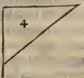


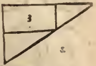
Rectilinei recti

1 Omnes recti rectilinei anguli: ſunt equales.

2 Omne ſpacium quod aliquod pūctum, circūquaqꝫ ambit: eſt quattuor rectis equale.

3 Ab equali vtriuſqꝫ lateris recti anguli medio: due recte vtriſqꝫ lateribus perpēdiculares, ad baſim vſqꝫ ꝑducte: equali eiuſdem baſis medio, atqꝫ ſibiinuicem orthogonaliter occurrunt. Et econtrario.





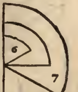
4 Duo anguli ad recti anguli baſim cōſtituti: ſunt eo minores, et vtriqꝫ neceſſario acuti.

5 Subtenta recto angulo baſis: vtroqꝫ eius latere, eſt ex neceſſitate maior.

6 Omnis rectus angulus: eſt extremorū obtuſi, acutiqꝫ medius: et eorū eq̄litas.

7 Medij recti: ab vtriſqꝫ extremis obtuſo, et acuto differentie equantur.

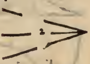
8 Due recte linee: vnū tātū rectū angulū, aut duos, aut quatuor claudūt: ſolos vero tres: minime claudere poſſunt.



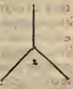
Obtuſi

1 Omnis obtuſus angulus: ex recto, et acuto cōſtat. rurſus: in rectum, et acutū reſolubilis.

2 Circa quodlibet punctū: tres obtuſos angulos fieri cōtingit. quattuor autē aut plures, minime.



3 Omnis obtuſus angulus: eſt duobus rectis ex neceſſitate minor.



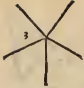
4 Si circa idē numero punctum, tres recte linee tres excipiāt angulos, et ſolū tres: erit vnuſquiſqꝫ eorum obtuſus. triū vero rectarum, nulla alteri directa erit.



Acuti

1 Omnis angulus, quo obtuſus rectum vincit: eſt acutus.

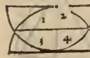
2 Si tres recte linee eodē numero puncto cōmunicantes, non ſibiinuicē directe ſint: duos tantum angulos continentes: vtroſqꝫ acutos eſſe neceſſe eſt.



Quinqꝫ anguli acuti: totā ſuperficiē (que vnūquodqꝫ punctū circūſtat) primū 3
occupare ſufficiūt. Quattuor autem/aut pauciores: minime ſufficientes.

Inflexi

Concaui

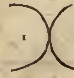


Impoſſibile eſt eandē rectā lineā: vtraqꝫ concaui anguli latera contingere. ſed 1
que eorum alterum contingit: reliquū aut actu/aut potentia ſecat.

Vtraqꝫ concaui anguli latera: aut ſeſe contingere/aut ſibiinuicē directa eſſe nō 2
poſſunt.

Contingit ab anguli concaui vertice/rectam in oppoſitam partem productā: 3
et alterum: et vtrūqꝫ eius latus ſecare.

Si concaui anguli latera/vtriſqꝫ iuncta ſint extremis: erūt vtriqꝫ anguli interio 4
res oppoſiti equales/et quos eadem latera poſſunt. Amplius vero vtriſqꝫ cō
tinue productis: fient et duo extrinſeci anguli inter ſe equales.



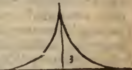
Simpliciter nec maximus concauus angulus aſſignari poteſt nec minimus. 5

Conuexi.

Omnes anguli contingentie duarum curuarum/conuexi ſunt. 1

Si vtraqꝫ conuexi anguli latera ſeſe actu/aut potentia ſecant: ipſis vtramqꝫ in 2
partē circa ſuū centrum productis/fient quattuor anguli: quorū duo cōuexi
exteriores inter ſe/pariter et duo concaui interius facti/equales.





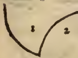
Si conuexi anguli latera vtraqꝫ/recta linea (in aliis a 3
vertice anguli punctis/ſuis extremitatibus con=
tingat: ad quam/ab ipſo anguli vertice fuerit alia
recta (vtrumqꝫ latus in eodem vertice cōtingens)
deſcendēs/ac eidem orthogonaliter incidens: ip=
ſum angulum per equalia diuidet. Item et lineā/cui orhogonaliter incidit.
et vtraqꝫ cōuexi anguli latera: erūt aut actu/aut potētia equalia. Et ecōuerſo.
Qꝫ ſi non eidē orthogonaliter occurrat: erunt anguli cōuexi latera ſecundū
potentiam inequalia. linea tamen dicta/eam cui incidit: equis medictatibus
partietur.

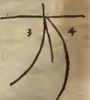


Mixti

Impoſſibile eſt mixtum angulū: per rectam lineam/in duo equalia diuidi. 1

Omnis angulus contingentie duarum curuarum/quarum altera/alteram cō= 2
tinet: eſt mixtus.





Si mixti anguli latera contingentia ſunt: impoſſibile eſt eas
eſſe circūferētias equales/aut circūferētiarū equaliū ptes. 3

Si mixti anguli latera ſeſe aut actu/aut potentia ſecant: im=
poſſibile eſt eandem lineam vtrūqꝫ contingere. Si autem
ſe contingunt: linea eadem eſt vtrūqꝫ/in eorum contactu 4
contingens.

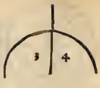
Medij recti



Si recta linea curuum medij anguli latus in eius vertice cō
tingens/recto lateri perpendiculariter inſiſtit: erit angulus medius rectus. 1
Qꝫ etſi medius angulus rectus eſt: erit linea recta recto eius lateri (in ipſo an
guli vertice) orthogonaliter inſiſtens/curuū eius latus contingens.

2 Rectum mediũ angulũ:rectilineo recto et maiorẽ/et minorẽ eſſe contingit.

3 Omnes anguli medij recti:ad partẽ curue linee cõuexam collocati/ſunt rectilineis rectis maiores.



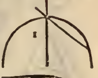
4 Omnes vero ad concauam eiuſdem curue faciem conſtituti:rectis rectilineis minores ſunt.

5 Totum ſpaciũ/cõuexe curue linee faciei adiacens:duos rectos rectilineos angulos ſuperat.duobus vero mediis rectis/in ea parte factis quattuor.

6 Vniuerſa ſuperficies:quã linee curue concaua facies/ſinuſq; ambit: duorum rectorũ rectilineorũ angulorũ ſupficie minor eſt.que duos rectos medios/ ea in parte diſtinctos equat.

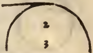
7 Omnis linea recta curuã ſecans/et ad eius cẽtrum directa:quattuor angulos medios diſtinguit.Omnes quidẽ rectos:quorum duo/et duo partis eiuſdẽ equi ſunt.et ecõuerſo.

Medij obtuſi et acuti.



1 Recta linea/curuam preter eius centrũ ſecans:angulos medios inequales cõplet.alterum quidem acutum/alterum vero obtuſum.

2 Dabilis eſt maximus ãgulus medius obtuſus:et minimus acutus.Maximus vero acutus/aut minimus obtuſus:minime.

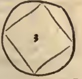


3 Si recta linea extremo ſui puncto/curuã in medio eius puncto contingat:erũt vtriq; facti anguli medij.alter quidem obtuſus maximus:alter vero acutorũ minimus.

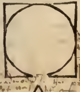
Figure rotunde

1 Figura rotunda:eſt omniũ poligoniarum principium.

2 Rotunda figura:tota eſt vniformis/ſimplex/indifferẽs/et poligoniarũ omniũ vnitas.



3 Omnis rotunda figura:poligonie inſcribi et circũſcribi poteſt.
Tunc vero rotunda poligonie figura inſcribit̃:quãdo oĩa eius latera cõtingit.
Circũſcribitur autem:quando per omniũ ipſius angulorum/vertices tranſit.

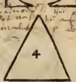


poligonie

1 Omnis poligonia figura:ex rotunda/ſecundum potentiam originem trahit.

2 Nulla ſecundũ actũ figura poligonia:ex rotunda conſtat/aut in rotundam reſolui poteſt.

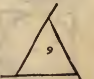
3 poligoniam figuram:duobus dũtaxat lateribus/atq; angulis:impoſſibile eſt eſſe perfectam.



4 Minimus laterum/et angulorũ poligonie figure numerus ternarius eſt:maximus autem nullus.

5 poligoniarum figurarum/eſt aliqua prima:media vero aut vltima minime.

6 Omnis poligonia figura:tot habet angulos/quot et latera.et econuerſo.



7 Impoſſibile eſt poligonie figure:acutos tribus plures/aut rectos plures quatuor ineſſe.

8 Quota eſt vnaqueq; poligoniarum figurarũ:duplo pluribus rectis angulis/ omnes eius anguli ſimul ſumpti/ſunt equales.

9 Cuiuſlibet figure poligonie:omnes extrinſeci anguli(productis eius omibus lateribus exterius facti)quattuor angulis rectis equantur.



Si duobus aliquibus figure angulis/ſubtenta recta linea extrinſecū ſpacium 10
claudit:ea aut figura non eſt/aut imperfecta eſt.

Circuli

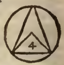
A circuli centro:recte omnes ad circūferentiā extente/ſunt equales. 1

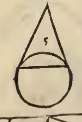
Dato in circulo quolibet puncto:ſi ab ipſo ad circūferētiam/producte pluſq̄ 2
due recte fuerint equales:id eius fore centrum eſt neceſſe.



Si quotlibet recte linee/in circulo fuerint equales:neceſſe eſt et rectas a cētro 3
ad equalia earū media productas eſſe equales. Et ediuerſo contingat.

Si duo anguli in circulo:vnus ad centrū/alter vero ad circūferen= 4
tiam conſiſtens/baſes habuerint equales:erit qui ſupra centrū
conſiſtit/conſiſtenti ſuper arcum duplus.





Si a dato extra circulum pūcto:due recte ad eius circūferentiam 5
ducte/eūdē contingāt:erūt equales. rectaq; linea vtriſq; ſubtē=
ſa/erit eius diametro minor: eq̄les ad vtrāq;/angulos rectilineos relinquēs.

Duorum circulorum: que diametri vnius/ad alterius diametrum proportio: 6
ea eſt et circūferentie/ad circūferentiam. totorum autē circulorum adinuicē
proportio:vtriq; proportioni duplicata.

Figure equilatere



Equāgula tantū

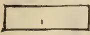
Omnis figura equilatera:oppoſitos angulos/habet equales 1

Impoſſibile eſt omnium inequalium angulorum figuram:equilateram eſſe. 2

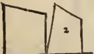
Equiangule

Omnis equiangula figura:aut omnia/aut oppoſita latera habet equalia. 1

Omnium inequalium laterum figura:equiangula minime eſt. 2



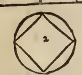
Que nec omnes angulos/neq; omnia latera equalia participat/nec inequalia: 3
ſed quedam quidem equalia/quedā vero inequalia:neq; tota equilatera eſt/
neq; tota equiangula. ſed vtrimq; media: partim quidem equalium laterum/
atq; angulorum: partim vero inequalium.



Equiangule et equilatere

Omnis equiangula/equilateraq; figura:omni ex parte regularis eſt. 1

Si equiangula/et equilatera figura circulo inſcribatur:erūt omnia eius latera/ 2
equalium ipſius circuli portionū chorde. Et rurſus ediuerſo fieri oportet.



Equiangule/eq̄latereq; figure circulo circūſcripte:vniuerſa latera/mediis ſuis 3
equalibus ipſum circulum contingunt. et econuerſo.

Omnium poligoniarum figurarum: ſola equiangula/et equilatera circulo q̄ 4
ſimillima eſt.

Figure vniformis



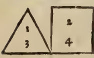
Vniuerſa figure vniformis latera:extremis dūtaxat ſuis punctis/cōmunicant. 1

Omniū laterum vniformis figure applicatio:par eſt/atq; vniformis. 2

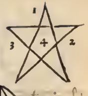
Impoſſibile eſt vniformis figure latera:duas aut eiuſdem/aut diuerſarū ſpe= 3
cierum claudere figuras.

Omnes trigoni/et tetragoni:ſunt vniformes. 4

Egredientis



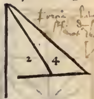
Egredientis figure latera:et extremis/et mediis ſuis pūctis cōmunicātia ſūt. 5



2 Eorum quoq; /diſpar eſt applicatio.

3 Inſuper et duplices ex neceſſitate ſiue eiuſdem/ ſiue diuerſe ſpeciei figuras claudunt.

4 prima ſecantiū laterum/et egredientiū angulorum figura : eſt penthagonus



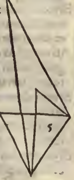
Trigoni

1 Impoſſibile eſt trigoni/duos angulos eſſe rectos.

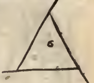
2 Si quodlibet trigoni latus in rectum protēdatur : fiet exterior angulus/interiori oppoſito angulo maior.

3 Cuiuſlibet trigoni omnes anguli:duobus rectis ſunt equales.

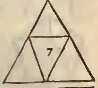
4 Recta linea a dati trigoni vertice/eius baſim equaliter ſecās:datum trigonum equaliter ſecat.



5 Si ab vtriſq; terminis alicuius laterum trigoni/ due recte citra eius verticē aut ad latus aut ad medium aut extra extente cōcurrant:angulum ſuperiori(quem verſus tenduntur)verticis angulo maiorē itercipiēt.Si vero vltra verticē:angulū minorē



6 Impoſſibile eſt trigoni latera/quātumlibet in rectum producta:in partem trigono oppoſitam concurrere/clauderéq; figuram.

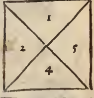


7 Si datum trigonū/tres recte linee in tribus eius angulis contingant/ſingule ſingulis ipſius trigoni lateribus equidiſtantes:his in rectum(quoaduſq; cōcurrant)extentis:neceſſe eſt vt circa datum trigonū/ tres alios definiant trigonos iter ſe/datoq; trigono equales:et ſimiles.ex quibus cū dato trigono/medio:alius totus conflatur trigonus/vnicuiq; eorū ſimilis/et quadruplus. cuius ſingula latera:ſingulis minorū lateribus ſibi correſpondētibus/equidiſtantia erunt atq; dupla.

8 Solus poligoniarū figurarum trigonus:tres angulos acutos habere poteſt.

9 Trigoni quelibet duo/et duo latera:ſunt reliquo maiora.

10 Maius trigoni latus:maiori angulo ſubtenditur.et econuerſo.



11 Trigonus eſt omniū poligoniarum:ſecūdū actum/principiū: et in diſſimiles figuras irreſolubilis.

12 Omnis trigonus:in ſolos trigonos reſoluitur.

13 Omnis poligonia figura:quotquot angulos/ac latera obtinet:in totidem trigonos eſt reſolubilis.

Recti	Obtuſi	Acuti
4	0	0
1	2	1
2	1	1
0	2	2

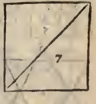
Tetragoni

1 Contingit eiuſdem tetragoni/omnes quattuor angulos eſſe rectos:aut duos quidem obtuſos/et duos acutos:aut duos rectos/vnū obtuſum/et vnū acutum:aut vnū rectum/duos obtuſos/et vnū acutum.

2 Si tetragoni tres anguli recti ſunt:erūt et omnes quattuor eius anguli recti.

3 Nulli tetragono:plures duobus et acuti/et obtuſi anguli ineſſe poſſunt.

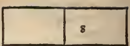
4 Cuiuſlibet tetragoni:omnes anguli/quattuor rectis angulis equantur.



5 In omni tetragono anguli/angulis: et latera/lateribus ſunt oppoſita.minime vero angulis/latera:aut lateribus/anguli.

6 Non omnis tetragonus:a ſua diametro/equaliter diuiditur.

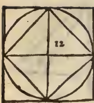
7 Tetragoni diameter:eūdem in geminos triangulos/diſſoluit.

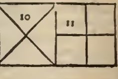


Recta linea equalibus oppoſitorū tetragoni laterū mediis applicata: tetragonū eūdem in duos equales tetragonos partitur. 8



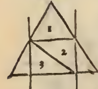
Si recta linea ab aliquo dati āguli tetragoni angulo alicui laterum inſiſtat: datū tetragonū in trigonū et alium tetragonum partietur. 9



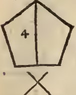


Ab omnibus quattuor dati tetragoni angulis/ſingule recte in medio aliquo puncto concurrentes: totum tetragonū in quattuor trigonos diuidūt. 10

Si vero ab omniū ſuorum laterum mediis punctis/ recte quattuor in medio itidem aliquo puncto iūgantur: totum tetragonum in quattuor minores tetragonos diſſociabunt. 11



Si omnes dati tetragoni angulos/quattuor lineę rectę cōtingāt: fuerintqꝫ duę et duę quelibet oppoſitę inter ſe/atqꝫ ipſius tetragoni diametris ęquidiſtantes: quātūlibet in rectum ꝓductę/circa datū tetragonū quattuor trigonos definient: duos et duos quoqꝫ oppoſitos ęquales. ex quibus ſimul cū medio tetragono dato/totus vnus tetragonus conſurget: dato tetragono cōſimilis. et cuius latera oppoſita duo/et duo vtriſqꝫ dati tetragoni diametris ęquidiſtantia: eiſdem diametris ęqualia erunt. 12

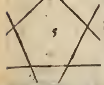


Inter poligonias figuras ſolū tetragonū quattuor angulos rectos habere cōtingit. 13

penthagoni

Omniū penthagonorum: quinqꝫ interiores anguli/ſex rectis ęquantur. 1

In penthagonorū ſpecie: figurę egrediuntiū angulorū/primę reperiuntur. 2



Omnis penthagonus eſt trifariā reſolubilis: aut in tetragonū/et trigonū/ aut in tres trigonos/aut in quinqꝫ. 3

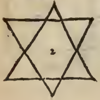
Si ab aliquo angulorum penthagoni: recta linea ad oppoſitum ipſi angulo latus deſcendens/equali eius medio applicetur: ſiue latus quidē ipſum in duo equa diuidat: eadem quoqꝫ et penthagonū totum partibus equis diſſolutū/ relinquet. 4

6

Recti	Obtuſi	Acuti
2	2	1
3	2	0
1	3	1
0	3	2
0	4	1
0	5	0

Omnes regularium penthagonorum (ex quibus egredientiū angulorum pēthagonos conſcribere poſſumus) extrinſeci anguli: ſunt ex neceſſitate acuti. Regularis penthagonus dicitur: qui et equilaterus/et equiangulus eſt. 5

Contingit quinqꝫ angulorum pēthagoni: duos eſſe rectos/duos obtuſos/ et acutum vnū. Aut tres quidē rectos/et duos obtuſos. Aut vnū rectum/obtuſos tres/et vnū acutū. Aut tres obtuſos/duos vero acutos. Aut obtuſos quattuor/et acutum vnū. Aut quinqꝫ obtuſos. Atqꝫ aliter penthagonorum anguli: variari non poſſunt. 6



In omnibus penthagonis: diſſimilia diſſimilibus opponūtur: latera quidē angulis/et lateribus anguli. 7

Hexagoni

Omnium hexagonorum/ſex interiores anguli: rectos angulos octo equant. 1

Omniqꝫ quelibet duo et duo hexagoni latera/in rectū ꝓducta cōcurrūt. 2

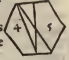
atq; circa vniformē hexagonū:egrediētiū angulorū hexagonū/conſtant.





3 Quadrifariā hexagonus omnis reſoluitur.aut in pēthagonū/et trigonum:aut in tetragonū/et/duos trigonos:aut in quattuor/ aut in ſex trigonos.

4 Impoſſibile eſt rectā lineā/ab hexagoni regularis angulo/ad mediū(alicuius ſuorum laterum)punctum protenſam: ipſum per equalia hexagonum ſecare.





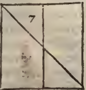
5 Si hexagonū/recta linea per equalia diuidat : aut oppoſitis eius angulis aut equalibus laterum oppoſitorum mediis ſuas extremitates inſerit.

6 Hexagoni omniū ſex angulorū:cōtingit vnū rectum eſſe/quattuor obtuſos/ et vnū acutum.aut duos rectos/obtuſos vero quattuor.aut rectos quidem tres/& tres obtuſos.aut quattuor obtuſos/duos vero acutos.aut vnū rectū/ et obtuſos quinq;.aut contra quinq; obtuſos/acutum vero vnū.aut deniq; ſex omnes obtuſos.aliter autem hexagonorum anguli/minime cōuenietēr nectuntur.

6

Recti	Obtuſi	Acuti
1	4	1
2	4	0
3	3	0
0	4	2
1	5	0
0	5	1
0	6	0

7 In hexagonis ſimilia/ſimilibus e regione opponūtur:latera quidē lateribus/atq; anguli angulis.



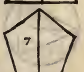
Figurarū ſequētiū ꝓprietates:ex precedētiū proportione/ cognoſci poſſūt. Alternatim eni figurarū ſpecies:ſecūdū ſuorū laterum/angulorūq; oppoſitionem permutantur.

Nam trigoni prime omniū figure:nec latus lateri/nec angulus angulo opponitur.ſed contra angulo/latus:lateri vero angulus.



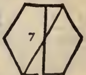
In tetragono vero contra:non angulo/latus:aut angulus lateri: ſed angulus/ angulo et lateri latus e regione conſiſtit.

In penthagono vero:rurſus latus/et angulus ſeſe ex oppoſito reſpiciunt.



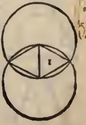
In hexagono autem iterum ediuerſo:latus quidem et latus/angulus et angulus opponuntur. Et ita deinceps.

Quocirca in quibus latus/et latus:angulus/et angulus contra ſe ponuntur: equalis totius diuiſio fit per lineam rectam/ab angulo vno ad oppoſitum angulum productam.aut ab vnius laterum equali medio:ad equale lateris oppoſiti medium.



In quibus autē diſparia latus/et angulus oppoſita ſunt/fit totius equalis di= uiſio:ſi ab angulo/ad lateris(eidem angulo oppoſiti)equale medium:aut ab equali lateris medio/ad angulum eidē lateri oppoſitū:recta linea extendat̄.

Iſopleuri

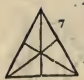


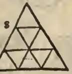
1 Si ſecundū date linee longitudinem/ſuper puncta ipſius extrema duobus circulis deſcriptis : eorum vtraq; ſectionis puncta/date linee terminis ꝑ rectas copulentur:fient ſuper datam lineam duo trigoni iſopleuri.

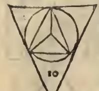
2 Neceſſe eſt trigoni iſopleuri:omnes angulos/eſſe acutos.

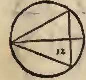
3 Omnis iſopleurus trigonus:et equilaterus eſt/et equiangulus. et ecōuerſo.

4 Omnes iſopleuri ſunt ſimiles/et proportionabiles.









Quilibet angulorũ iſopleuri: eſt vt due recti vnius, tertie. rectus vero: vt tres 5
eiuſdem ſecunde.

Omnis angulus rectus: ad quelibet iſopleuri angulorum, eſt ſeſqualter: eũdẽ 6
totum, eiuſq; medietatem continens.

Ab ęqualibus ſingulorum iſopleuri laterum mediis: tres rectę perpendicula 7
riter eductę, in eius centrũ concurrunt. Amplius verò ſi ad oppoſitos ꝓdu-
cantur angulos: eorum quemlibet ęqualiter in duos angulos reſoluent. to-
tumq; iſopleurũ, ſingulę in duos ęquales orthogonios diducent.

Ab iſopleuri centro ad eius baſim, duę rectę lineę ſingulę ſingulis ex vtraq; ꝑ 8
te ſibi correſpondentibus lateribus ęquidiſtantes: totã ipſius iſopleuri ba-
ſim, in tres partes ęquales diuidunt: et earum vtraq; ſingulis tertiis equalis.
ad mediam verò baſis tertiam: iſopleurum, complectuntur, totius dati iſo-
pleuri partem, portionemq; nonam.

Vnde manifeſtum eſt: datam rectam lineam, in tria equalia diuidere: et ex ea 9
conſtituere iſopleurum.

Iſopleurus et circulus mutuo ſibi inſcripti, atq; circũſcripti: concẽtrici ſunt. 10

Si circulo inſcriptus eſt, et circũſcriptus iſopleurus: erunt omnes recte que a 11
centro, ad inſcripti angulũ, et circũſcripti latus producuntur: aut eedem, aut
equales: et omnes quidẽ totius diametri circuli due quarte, vnaq; eius me-
dietas. linee vero a centro, ad circunſcripti angulos protenſe: ceteris duple,
totiq; diametro circuli equales. Atq; et circũſcriptus iſopleurus: totus, toti
inſcripto quadruplus. eiuſq; ſingula latera, ſingulis iſcripti lateribus dupla:
et omnia ſimul, omnibus ſimul.

Iſopleuri circulo inſcripti: lineę quę à centro ad media eius latera, orthogona- 12
liter producuntur: item et reſiduę lineę quę dictas lineas perficiũt (ad circũ-
ferentiam in ſagittę modum protenſę) ſinguli per ſe, totius diametri circuli
ſunt quartę.

In omni verò iſopleuro, duę lineę quarum altera ab eius centro, ad mediũ la-
teris ęquale: altera verò, ad angulum protenditur: conſiderandę ſunt. et earũ
illa quidem prima, hęc verò ſecunda dicitur.

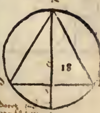
Si eidem circulo inſcriptus ſit, et circũſcriptus iſopleurus: erit circuli ſemidia- 13
meter prime inſcripti linee duplus. et eiuſdem ſecũde, ac prime circũſcripti:
equalis. cuius erit ſecũde, medietas. circũſcripti vero prima: prime inſcripti,
dupla: et eiuſdem ſecunde, equalis. Secũda vero: prime, inſcripti quadrupla:
eiuſdem ſecunde, dupla: et totius circuli diametro, equalis.

Trigoni, iſopleuri laterum: et angulorum: idem eſt centrum. 14

Iſopleuri circulo inſcripti: linea tota ex prima eius linea, et ſecunda conſtans 15
(vt ab angulo ad medium eius latus producta) tres diametri circuli quartas
obtinet.

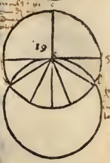
Circũſcripti vero circulo iſopleuri: tota linea que ex eius prima, et ſecunda cõ 16
ſurgit: ſex ſimul diametri quartis eſt equalis, et ad totam circuli diametrum
ſeſqualter.

17 Diuiſa dati circuli in quattuor partes equales diametro: ſi a puncto (preter centrũ) duas dirimẽte quartas/atq; duabus eius quartis cõmuni: recta linea orthogonaliter/vtrimq; ad circũferentiã producaẽ: tertiã totius circũferentie partem abſcindet. cuius erit et chorda/et inſcribẽdi eidem circulo iſopleuri latus.



18 Hinc cuiuſlibet circuli dati circũferẽtiã: ĩ tres portiones equales diuidere/ facile poſſumus: et eidem inſcribere/et circũſcribere iſopleurum.

Sit eni datus circulus a b c d: cuius centrũ e/diameter a c. eius ſemidiametrum e c/per equalia partior in ſigno f. erũq; e f/et f c totius diametri quarte. A puncto vero f in vtrãq; partẽ educo perpendicularẽ b f d: quã dico eſſe iſopleuri dato circulo inſcribendi latus. et arcũ b c d/totius circũferẽtie a b c d: partem eſſe tertiã. Similiter et arcus a b/et a d. Ductis igiẽ rectis a b/et a d: erit a b d iſopleur⁹/dato circulo inſcriptus. Aliter autem (et faciliori quidẽ modo) licet & datũ circulum in tres partes equales diuidere: ac eidem inſcribere iſopleurum. Sit enim vt prius circulus a b c d: fiatq; c circuli centrum. circa quod deſcribatur circulus priori equalis/eũdem in punctis b et d ſecãs. Eius eni circũferentia per centrũ e tranſibit: eritq; linea c e/ſemidiameter vtriuſq; cõmunis. Dico rurſus arcũ b c d/tertiã totius circũferentie eſſe partem. et rectam b d/ iſopleuri eidem circulo inſcribendi latus.

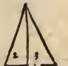


19 Datum rectum angulum in tres partes equales diuidere.

Sit precedẽtis propoſitionis hypotheſis: ducaturq; alia diameter/diametro a e c/circuli a b c d perpendicularis: q̃ ſit g e h. dico vtroſq; arc⁹ g b/et h d eſſe eq̃les: et arcuũ g b c et c d h equaliũ/ ptes tertias eſſe/totiuſq; circũferẽtie duodecimas. Sũt eni vtriq; arc⁹ g b c/et c d h: totius circũferẽtie quarte/rectos ãgulos g e c/et c e h ſubtẽdẽtes. tertia vero quarte pars: vna eſt toti⁹/duodecima. Si igiẽ vtriq; arc⁹ b c/et c d in duo equalia diuidãtur/in pũctis i k: erũt vtriq; arc⁹ g b c/ et c d h tribus partibus equaliter diuiſi. et recte linee ad pũcta b i et k d ducte: vtroſq; angulos g e c/et c e h rectos: in tres angulos eq̃les partiẽtur. quorũ vnuſquiſq;/erit anguli iſopleuri media/recti vero anguli/tertia pars.

Iſoſcelis.

1 Oĩs iſoſceles: alteri cuicũq; iſoſceli ſimilis ẽ/et mutua ꝓportione cõſũctus.



2 Cuiuſlibet iſoſcelis: duo ad baſim anguli/equi ſunt. et cuiuſcunq; trigoni duo ad baſim anguli ſunt equales: neceſſario iſoſceles eſt.

3 Ab iſoſcelis angulo (quẽ duo equa latera claudunt) ad mediũ lateris oppoſiti equale/recta producta linea: eidẽ lateri orthogonaliter inſiſtit. eãdem/ totumq; iſoſcelem: per equalia diuidens.

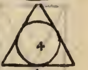


4 Cõtigit dato circlo: iſoſceles iſcribere/et circũſcribere iſinitos iter ſe ieq̃les

5 Triangulorũ iſoſceliũ anguli: eorũ lateribus/eccẽtrici comprobantur.

6 A medijs iſoſcelii trigoni/laterum equalibus tres eiſdem perpẽdiculares: in ſuorum angulorum/aut laterum concurrunt centrum.

7 Cuiuſlibet iſoſcelis duo ſunt cẽtra: alterũ quidẽ ſuorũ laterum/alterũ vero ſuorum angulorum.



Scaleni

1 Cuiuſlibet ſcaleni: omnes tres anguli/ſunt inequales.

2 Scaleni aut nullũ eſt centrũ/aut duo ſunt centra: alterũ quidẽ laterũ/a medijs lateribus equidiſtãs. alterũ vero angulorũ/quod ab omnibus eius angulis equidiſtat.

3 Contingit ſcalenos: circulo inſcribi/atq; circũſcribi infinitos.



4 Oĩs ſcalenus: ẽ trigonus irregularis.

Orthogonij.

1 Impoſſibile eſt orthogonium: eſſe iſopleurum.

2 Contingit orthogonium: et iſoſcelem/et ſcalenum eſſe.

Si datus orthogonius fuerit iſoſceles:erit vterqꝫ angulorum equalium ad baſim conſiſtentium/recti medietas.angulus vero ſuperior/ equis lateribus contentus:vtriſqꝫ eorum duplus. 3

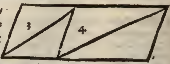


Si ab vtrorumqꝫ laterum(rectum angulum continentium)orthogonij mediis equalibus due perpendiculares educātur:ſuper equale ſue baſis medium vtreqꝫ concurrēt.iſoſcelij vero orthogonij tetragonus interior:erit quadratus/totius orthogonij medietas.duo vero trigoni/vtriqꝫ orthogonij iſoſceles: toti orthogonio ſimiles/et vtriqꝫ vna eius quarta.At ſcaleni orthogonij:erit tetragonus interior/ parallellogrāmus nō quadratus:totius eiuſdem medietas.duo vero trigoni orthogonij ſcaleni:ſuo toti ſimiles/et vterqꝫ vna eius quarta. 4

Ambligonij

Nullus ambligonius:eſt iſopleurus. 1

Ambligonius trigonus:eſt et iſoſceles/et ſcalenus. 2

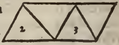


Si ſuper dati ambligonij iſoſcelis baſim/ maiuſqꝫ latus:alter(diuerſa ex parte)cōſtituarur ambligonius eidē equalis:erit ex vtriſqꝫ ſimul perfecta rhombi figura. 3

Si vero ſup ſcaleni ambligonij latus maius/equalis conſiſtat ambligonius: ex vtriſqꝫ rhomboidis/ſimiliſqꝫ rhombo figura conſtabit. 4

Oxigonij

Contingit oxigonium trigonum:iſopleurum/iſoſcelem/ſcalenumqꝫ eſſe. 1



Si ſup eādem baſim(ex aduerſis partibus)duo oxigonij iſopleuri/aut iſoſceles cōſiſtant/ adinuicem equales:rhombi figuram perficient. 2

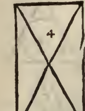
Si vero ſup baſim eādem/equales oxigonij ſcaleni (diuerſis partibus)collocētur:vtriqꝫ ſimul/rhomboidis figurā explebūt. 3

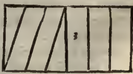
parallellogrāmi

Omnis parallellogrāmus:a ſua diametro/in duo equalia natus eſt diuidi. 1



Due linee recte in parallellogrāmo/lateribus ſibi correſpondentibus equidiſtantes/ac ſeſe ſuper eius diametrum ſecātes: datum parallellogrāmū/ in quattuor parallellogrāmos reſoluūt. quorum qui circa diametrum cōſtant : et inter ſe/et toti parallellogrammo ſimiles ſunt.reliqui vero duo equales inter ſe/et ſimiles:ſed quos toti parallellogrammo/diſſimiles eſſe contingit. 2





Quotlibet linee recte:inter oppoſita parallellogrāmi latera/inter ſe equidiſtātes:ſunt et equales.que et ſi correſpōdētibus ipſius parallellogrāmi lateribus equidiſtēt:erūt et ipſis quoqꝫ lateribus equales. 3

Si quotlibet trigoni:ſuper idē/aut equalia parallellogrami latera ad oppoſitū latus applicentur:erunt equales.et eorū vnuſquiſqꝫ/totius parallello 4

grãmi medietas.

5 Cuiuſlibet parallellogrãmi: oppoſiti anguli/ſunt equales.

6 Si parallellogrammi angulorum/rectus fuerit vnus: erunt et omnes recti et equales.

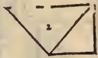
7 Si vero eorum vnus aut acutus fuerit/aut obtuſus: erũt duo acuti/et duo obtuſi. Et acuti quidem inter ſe equales et contrapoſiti pariter et obtuſi.



8 Super idem parallellogrãmi latus: duo eius anguli acuti/ aut duo obtuſi cadere non poſſunt.

9 Angulos parallellogrammi: rectos omnes eſſe contingit. aut duos obtuſos/ duos vero acutos. atq; alio nullo pacto: eius anguli permutantur.

Trapezij



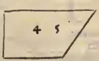
1 Omnis trapezius tetragonus: eſt irregularis/atq; per ſe imperfectus.

2 Contingit trapezium tetragonum: a ſua diametro et equaliter/ et inequaliter diuidi.

3 Contingit trapezij tetragoni quattuor angulorum: vnum eſſe rectum/ duos obtuſos/et vnum acutum. aut rectos quidem duos/obtuſum vnum/et acutum vnum. aut duos obtuſos/et duos acutos. aut vnum rectum/vnum obtuſum/duos vero acutos. aliter autẽ variatis angulis: non erit trapezius.

Rectus	Obtu.	Acut⁹
1	2	1
2	1	1
0	2	2
1	1	2

4 Contingit item trapezij tetragoni laterũ: duo equidiſtantia eſſe/minime vero plura.



5 Si trapezius ſuper idem latus duos habeat rectos: duo eius latera eidẽ tertio perpendicularia/inter ſe equidiſtantia erunt. oppoſita vero eius latera/nulla erunt equalia.

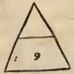
6 Si vero idem trapezius ſuper vnum latus duos habeat acutos equales/et ſup latus oppoſitum duos pariter equales obtuſos: erunt eadem latera equidiſtantia ſed inequalia. Reliqua vero duo equalia: at inequaliter diſtãtia. que in partem eãdem producta iſopleurum aut iſoſcelem ſuo concurſu perficient.



7 Impoſſibile eſt trapezij: duo eadem latera et equalia/et equidiſtantia eſſe.

8 Cuiuſlibet trapezij: duo aliqua latera in eãdem partem producta/concurrere neceſſe eſt.

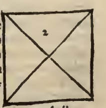
9 Vnde manifeſtum eſt quemlibet trapezium tetragonum/eſſe vt trigoni partem. cui ad trigoni complementum/alter trigonus deeſt. et ſi a trigono trigonus auferatur: relinquitur trapezius.

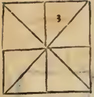


Quadrati

1 Cuiuſlibet quadrati: omnes anguli ſunt recti.

2 Si oppoſitos duos/et duos quadrati angulos/recte linee due incidãt: erit vtraq; totius quadrati diameter/eũdem in duos equales orthogonios reſoluens. et altera alteram ſuper ipſius quadrati cẽtrum: orthogonaliter per equalia ſecans. que et ſimul totũ quadratum/in quattuor orthogonios reſoluent: inter ſe equales.

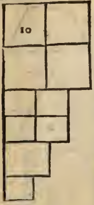




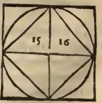
Si equalibus oppoſitorū dati quadrati laterum mediis/due recte linee occur= 3
rant:erunt et inter ſe/et omnibus ipſius quadrati lateribus equales.ac ſein=
uicē ſuper eius centrū:orthogonaliter/et ꝑ equalia ſecātes.totūq̧ quadratū
in quattuor diuidēt quadratos adinuicē equales.cū vtriſq̧ vero diametris:
totum eūdem/in octo equales orthogonios partientur.



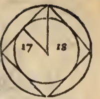
Linea q̄drati prima/medię eius coſtę equat̄.ſecūda verò/ē eius ſemidiameter. 4
Omnis quadratus:ſuę ſemidiametri quadrato/duplus exiſtit. 5
Cuilibet rurſus quadrato:totius ſuę diametri quadratus/duplus approbat̄. 6
quadrato verò ſuę ſemidiametri quadruplus.
Si fuerint duo quadrati cōmenſurabiles:erunt et eorū latera cōmenſurabilia. 7
Si verò incōmenſurabiles:et incōmenſurabilia. et ediuerſo, ſi cōmēſurabilia
latera:et quadrati cōmenſurabiles.et ſi incōmenſurabilia: incōmēſurabiles.
Nullus numerus ad numerū quadratū duplus/aut octuplus:eſt quadratus. 8
Vnde fit,vt quadrati diametri/ad coſtę quadratū:aut quadrati coſtę/ad ſemi 9
diametri quadratum:nulla ſit,vt numeri ad numerū ratio/atq̧ habitudo.Et
quadrati diametri/et coſtę:itidem coſtę/et ſemidiametri incōmenſurabiles.
atq̧ et eorum latera diameter/et coſta:item coſta,et ſemidiameter/incōmen
ſurabilia.Et rurſus media coſta:toti diametro/atq̧ ſemidiametro incōmen=
ſurabilis:et eius quadratus/illorum quadratis.
Diameter/ad ſemidiametrū:et coſta/ad ſui dimidiū cōmenſuratur. ſuntq̧,vt 10
duo/ad vnū:aut quattuor/ad duo.Et eadem ratione diametri quadratus/ad
ſemidiametri quadratū:et coſtę quadratus/ad medię coſtę quadratū.quorū
ꝓportio eſt,vt quatuor/ad vnū:aut vt 16/ad quattuor.totius autē diametri
quadratus/ad medię coſtę quadratū:incōmenſurabilis/et eidem octuplus.



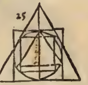
Si ab extremis date linee punctis:due eidem perpēdiculares/et equales pro= 11
ducantur:extremis earum pūctis/per rectam lineā cōiunctis:factus erit ſup
datam lineam quadratus.
Omnis quadratus eſt ſue coſte potentia.idq̧ totum quod ſue coſte/per ſe 12
poteſt multiplicatio.
Omnis recta linea in ſeipſam ducta/quadratū gignit:cuius eſt et ipſa latus. 13
Si data linea recta/in quattuor partes ęquales diuidatur:cōtingit ex ea modo 14
predicto/fieri quadratum.
Si ꝓductis in dato circulo duabus diametris/altera alteri 15
perpēdiculari:quattuor earū extremitates/totidē rectis
lineis copulātur:naſcet̄ q̄dratus dato circulo inſcriptus



Si verò productis(vt prius)in dato circulo duabus diame 16
tris:ab extremis earum punctis/quattuor recte linee in
eiſdē circulū contingētes indefinite in vtrāq̧ partē(quo
aduſq̧ concurrunt)extendantur:quadratū dato circulo
circūſcribent.
Si ſuper quadrati centrum/ſecundum prime ſue linee longitudinē deſcribat̄ 17
circulus:erit dato quadrato inſcriptus.



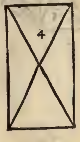
18 Si vero ſuper idem centrū: ſecūde linee interuallo, circulus ducatur: erit dato quadrato circūſcriptus.
19 Omnis quadratus circulo circūſcriptus: inſcripto eidē quadrato, duplus eſſe cōprobatur. eiuſqȝ diameter, coſte inſcripti dupla.
20 Circūſcriptus vero quadrato circulus: circulo eidē inſcripto, itidem eſt ex neceſſitate duplus.
21 Circūſcripti circulo quadrati coſta: inſcripti ſemidiametro dupla eſt. toti vero inſcripti coſte: tota circūſcripti diametrus, itidem dupla exiſtit.
22 Diametri circuli quadratus: eidem circulo circūſcriptus eſt, aut circūſcripto equalis. Quadrati vero, ſemidiametri circulus: eidē pariter quadrato circūſcriptus. Medie autem quadrati coſte circulus: eidem inſcriptus.
23 Inſcripti quadrati, et circuli cui inſcribitur diameter: et quadrati eidem circūſcripti circulo, coſta: vna ſunt linea, aut equales.
24 Inſcripti quadrati coſta, circūſcripti ſemidiametro: et eius ſemidiameter, medie circūſcripti coſte: tota vero diametrus, toti coſte eſt ex neceſſitate eq̄lis.



25 Si eidē circulo fuerint iſopleurus et quadratus inſcripti atqȝ circūſcripti: erit inſcripti iſopleuri ſagitta, diametri inſcripti quadrati et circuli pars quarta, ſagitta vero quadrati inſcripti: lateris inſcripti iſopleuri, ſexta pars. Circunſcripti autē ſagitta iſopleuri: totius circūſcripti quadrati lateris: et inſcripti diametri, atqȝ circuli pars media. Eſt autē ſagitta: recta linea inter arcum, et chordam: aut arcū, et angulum (cui ſubtēdit arcus) perpēdiculariter intercepta. hec quidem figurarum circūſcriptarū: illa vero inſcriptarum.



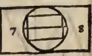
Altera parte longioris



1 Omnis altera parte longior: a ſua diametro, in duos equales natus eſt diuidi trigonos orthogonios.
2 Altera pte lōgioris diameter: ei⁹ āgulos p eq̄lia, et rectorū medietates ſecat.
3 Impoſſibile eſt vnam tantū altera parte longioris diametrum: eūdem in duos trigonos, aut iſopleuros aut iſoſceles, diuidere.
4 Due altera parte longioris diametri: ſeſe ſup eius centrū ſecant. totūqȝ altera parte longiorē, in quattuor trigonos adinuicē equales (et ſingulos quidem oxigonios iſoſceles) reſoluūt. in iſopleuros vero quattuor: eūdem per diametros reſolui, impoſſibile eſt.
5 Vtraſqȝ altera pte lōgioris diametros: orthogonaliter ſeſe didere ē īpoſſibile



6 Altera parte lōgioris centrū: ab omnibus eius quattuor angulis, equidiſtat. ab oibus vero lateribus, minie: ſed a duobus dūtaxat, et duobus oppoſitis.
7 Impoſſibile eſt altera parte longiori: circulū inſcribere. circūſcribere vero: ſed non omnifariam contingit.



8 Si circulo inſcriptus eſt altera parte longior: erit equaliter ſup eius diametrū (nō vltra, aut citra) inſcriptus. erūtqȝ due eius ſupficies, per circuli diametrū diuiſe equales: et vtreqȝ paralellogrāmi, altera parte longiores.
9 Contingit altera parte longiorem, per mediam lineam vtriſqȝ lateribus minoribus equidiſtantē: in duos quadratos reſolui. per mediam vero maioribus

equidiſtantē lateribus/aut per vtraſq; ſimul medias: in duos/aut quattuor quadratos reſolui non poteſt.

Super datam lineam: infinitos altera parte longiores/adinuicem inequales deſcribere contingit. 10

Hinc vniuſcuiuſq; linee: altera parte longior maximus/minimuſq; nullus aſſignari poteſt. 11

Ab equalibus (altera parte longioris laterū) mediis/quattuor recte perpēdiculariter educte: in eius centrū perueniunt/eius lateribus equidiſtantes/atq; ſibiinuicem in centro perpendiculares. 12

Rhombi

Omnis rhombus: eſt ſui lateris quadrato minor. 1

Rhombo et quadrato ſuper eādem baſim/aut equales ex eadem parte cōſtitutis. impoſſibile eſt rhōbi latera/aliqua ex parte quadrati lateribus/aut angulis applicari. At ſupremū rhombi latus: dextrum/aut ſiniſtrum quadrati latus/neceſſario ſecat. 2

Si ab aliquo rhombi angulorum: recta linea ad equale oppoſiti lateris mediū producta/eidem orthogonaliter inſiſtat: erit datus rhombus/ab aliqua ſua diametro in duos ſui lateris iſopleuros/reſolubilis: et ad vtrūq; eorum duplus. et ecōuerſo. Ceteri vero rhombi: ab vtraq; ſua diametro/in duos tātū iſoſceles reſoluūtur.

Sup lineā eādē/aut lineas eq̄les: cōtingit infinitos ineq̄les rhōbos deſignare. 4



Si quadratus/et rhombus ſuper eādem baſim ex eadem parte collocētur: erit duorum laterum rhombi ſuper baſim erectorum/a duobus ſibi correſpondentibus ipſius quadrati lateribus depreſſio/ac declinatio in obliquū: ſecūdum duos equalium circulorum arcus equales. quorum ſemidiameter: eſt vtriuſq; quadrati/rhombiq; latus. 5

Si ſuper eādem (ex eadem parte) baſim fuerint quadratus et rhombus: tanto minor erit quadrato rhombus/quāto fuerit ſue inclinationis a quadrato/arcus maior. 6

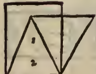
Super lineā datā: maximū/minimūq; rhombū impoſſibile eſt aſſignare. 7

Impoſſibile eſt rhombi: aliquem angulum/eſſe rectum. 8

Omnes anguli rhombi ſunt quattuor: duo/et duo oppoſiti equales: et horū duo quidem acuti/duo vero obtuſi. 9

Si angulorū dati rhōbi/vnus ad aliū fuerit duplus: erit et ei oppoſitus/alteri oppoſito duplus. et ſimul duo oppoſiti: duobus itidē oppoſitis/dupli. datus vero rhombus: ad ſui lateris iſopleurum/duplus. et econuerſo. 10

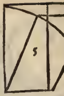
Rhomboidis



Si ſuper eādem baſim/aut equales/et inter equidiſtantes lineas rhomboides/et quadratus erecti ſint: neceſſe eſt eos eſſe equales. 1

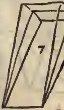
Impoſſibile eſt rhomboidem/rhombum/quadratum/atq; iſopleurum: inter lineas equidiſtantes/ſuper eādem baſim/aut equales conſiſtere. Quadratū autem/et rhomboidem: itidem et iſopleurum/et rhombum contingit. 2

3 Non contingit rhomboidis figuram: per ſuam diametrum/in duos trigonos iſopleuros/aut iſoſceles reſolui.



4 Que altera parte longioris ad quadratū habitudo: ea eſt rhomboidis/ad rhō bum. Et que rurſus permutatim rhombi ad ſuū quadratū: ea eſt rhomboi= dis/ad ſuū parte altera longiorem ratio.

5 Si ſup baſim eādē/ex eadē parte altera parte lōgior/atq; rhomboides collocē tur inter ſe equilateri: erit vtrorūq; rhomboidis laterū/ſup ipſam baſim cō= ſiſtentiū: ab ſimilibus/paribuſq; ipſius altera parte longioris lateribus incli= natio: ſecūdum equales equalium circulorū arcus. quorū ſemidiameter: eſt vtriuſq; latus/ſuper baſim erectum.

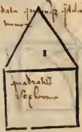


6 Omnis rhōboides ſuo altera parte longiori ſibi equilatero ex neceſſitate tāto minor eſt: quāto fuerit ab ſuo altera parte longiori ſup eius baſim collocato inclinationis arcus maior.

7 Sup datā lineā: rhomboidas cōtingit deſcribere infinitos/ inter ſe inequales.

8 Maximus/aut minimus eiuſdem linee rhomboides: eſt nullus.

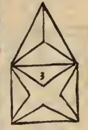
penthagoni equilateri



1 Contingit penthagonum equilaterum: inequalium eſſe angulorum.

2 Si ſuper dati quadrati latus/trigonus iſopleurus ſtatuatur: naſcetur exvtriſq; equilaterus penthagonus/at inequalium angulorum.

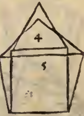
3 penthagoni equilateri: ex quadrato/et iſopleuro equilateris ſimul cōiunctis conſtituti: medij inter ſe oppoſiti anguli/duobus inferioribus ad baſim an= gulis rectis: vtriq; vtriſq; ſunt ſupbipartiētes ternas. ſuperiori vero angulo ad verticē conſiſtēti: dupli ſeſqualteri. Q̄ꝫ ſi dati penthagoni/ita ſeſe anguli habuerit: neceſſe eſt eūdē ex quadrato/et equilatero eidē iſopleuro eſſe con ſtitutū. inſuper et lineā mediam/quadratū ab iſopleuro dirimentē: cōmune vtriuſq; quadrati/iſopleuriq; eſſe latus.



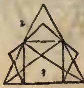
4 Omniū penthagonorū/qui ſimpliciter ęquilateri ſunt/et nō ęquiāguli: qui ex quadrato/et ſui lateris iſopleuro cōſtitutus eſt: ſolus regularis eſſe ꝓbatur.

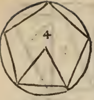
5 Oēs pēthagoni ſolū ęqlateri: in qbus linea recta/ſuperiorē trigonū ab iferiori tetragono dirimēs: ipſius pēthagoni latere aut maior/aut minor fuerit: ſeu q̄ nō ipſos pēthagonos in iſopleurū/quadratūq; laterū equaliū reſoluit: ſunt irregulares atq; imperfecti. Equianguli.

1 Omnis ęquiangulus penthagonus: eſt et equilaterus.



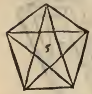
2 Deſcripto ſup datā lineā q̄drato/ſup quadratū vero eiuſdē lateris iſopleuro: cōſtabit ex vtriſq;/rectus date linee pēthagonus: eqlaterus/at nō equiāgu= lus. cuius ſi vtraq; latera iſopleuri ſup q̄dratū deſcripti/quātūlibet in rectū ad baſim extendanť: ipſaq; baſis in vtrāq; partē/aduſq; ꝓductis vtriſq; iſo= pleuri lateribus occurrat: neceſſe eſt ꝓducta iſopleuri latera/atq; ipſam ba= ſim: maiorē aliū claudere iſopleurū. a cuius vtriſq; angulis ad baſim conſi= ſtētibus/recte linee ad oppoſitos prioris quadrati angulos ꝓducte: ſeſe ſup centrum queſiti equilateri et equianguli penthagoni/ſuper datā lineam de= ſcribendi: ex neceſſitate condiuident.



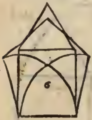


Super datam rectam lineam: equilaterum/et equiangulū et penthagonū ex inuento(vt prius)eius centro/deſcribere conuenit. 3

Si inuento(vt prius)equilateri/et equianguli penthagoni(ſuper datam lineā deſcribēdi)cētro:ab eo ad date linee terminos/due recte producātur:quarū lōgitudine/ſuper idē centrū deſcribatur circulus:neceſſe eſt eidem circulo/ deſcribendū penthagonū inſcribi.eiuſqꝫ circūferentie/portionē quintā:data linea/vt eius chorda ſubtēdet.cuius longitudine/ſi reſidua circūferentie portio/quattuor diuidatur in partes:erunt in tota circūferentia/diſtincta quinqꝫ puncta:deſcribendi queſiti penthagoni/angulorum ſigna. 4



Si ſuper datam lineam/equilaterus et equiangulus penthagonus collocetur: atqꝫ ab extremis date linee punctis/quattuor recte linee extendantur/ad ſuperiores angulos:due quidem ad ſupremū/date linee e regione oppoſitum: due vero/ad medios inter ſe oppoſitos.Inſuper et quinta linea/a medio angulo/ad oppoſitū medium extendatur angulū:neceſſe eſt has quinqꝫ lineas/ minorē in maioris medio/claudere penthagonū:equilaterū et equiangulū/ maiori oppoſitū.cuiuſquidē latera/maioris angulis erunt correſpondētia:et lateribus/anguli.cuiuſqꝫ centrum/erit maioris centro idem. 5



Cum ſuper eādē baſim:duo penthagoni vnus quidē rectus/alter vero equilaterus et equiangulus collocātur:erit equilateri et equianguli penthagoni a recto penthagono inflexio:ſecundū circuli arcum.eruntqꝫ medij eius anguli vtraqꝫ ex parte: a mediis recti penthagoni angulis/ſecundū portiones equalium circūferentiarum equales(quarum ſemidiameter erit vtriuſqꝫ pēthagoni latus)diſtantes. 6

Cuiuſlibet penthagoni:omnes quinqꝫ anguli/ſimul ſumpti: ſex ſunt rectis angulis equales. 7

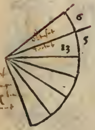
Quilibet angulorum pēthagoni equilateri et equianguli: ad angulū rectum ſeſquiquintus eſt.eūdem quidem continens:et eius partem quintam. 8

Quilibet angulus rectus:ſingulorū penthagoni equilateri et equianguli angulorum/eſt vt quinqꝫ ſexte. 9

Vnuſquiſqꝫ vero equilateri et equianguli penthagoni angulus:eſt vt recti anguli/quinte ſex. 10

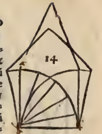
Idē angulus qui eſt recti anguli quinta pars:anguli penthagoni equilateri et equianguli/pars eſt ſexta. 11

Vnde fit vt vtriqꝫ circuli arcus:quibus equilateri et equianguli pēthagoni latera/a penthagoni recti(ſuper eādem baſim conſiſtentis)lateribus in vtrāqꝫ partem ad baſim inflectūtur:ſint vtrorūqꝫ arcuū/rectos recti penthagoni angulos ſubtendentiū:ſeu quibus equidiſtantia eiuſdē penthagoni latera/ſup baſim eleuantur(quorum vterqꝫ eſt quarta ſue totius circūferentie pars)ex neceſſitate quinte partes. 12



Recto in quinqꝫ partes equales angulo diuiſo: ſi toti/quinta eius pars addatur:penthagoni equilateri et equianguli angulus proueniet/ ex quintis anguli recti partibus ſex/conſtitutus. 13

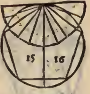
14 Si rectus angulus/in quinqꝫ partes diuidatur equales : ex eius diuiſione/dato cuilibet circulo : equilaterū/equiangulumqꝫ penthagonū inſcribere licebit.



Eſt autē datus rectus angulus/hunc in modū in quinqꝫ partes equales diuidendus. Sit verbigratia datus rectus angulus a b c:cuius latera fiant equalia/ſi inequalia ſunt. Nā ſi alterū eſt maius/& alterū minus deſcribatur ſecundū quātitatē minoris(quod poſitionis modo ſit a c)ſuper b cētrū circulus/qui latus maius in puncto c ſecet: erūtqꝫ latera a b/& c b ad equalitatē redacta. Deinde ſuper baſim a b/fiat rectus penthagonus equilaterus a b c d e:et alter equilaterus et equiāgulus/ a b f g h. Erit igitur(vt ex prioribus notum eſt) angulorū/et laterū penthagoni equilateri et equianguli:ab angulis/et lateribus recti penthagoni inflexio:ſecundū circulorū arcus equales/quorū ſemidiametri ſunt vtrorūqꝫ penthagonorū latera equalia. Factis itaqꝫ a/et b cētris:ſecundū quātitatē linee a b/ducantur arcus b e h/et a c f inter ſe equales. Quorū partes b e/et a c:erunt totius circūferentie quadrātes. Eorū enim vterqꝫ/rectū angulū ſubtendit:b e quidē/rectū b a e:a c vero/ rectum a b c. Omnis autē arcus/rectum angulū ſubtendens:eſt ſue circūferentie quadrās. Quare et vtriqꝫ arcus b e/& a c equales. pariter et reſidui e h/et c f(quibus penthagonus a b f g h/equilaterus et equiangulus:a recto a b c d e/inflexus ſubmittitur)inter ſe equales. vterqꝫ igitur arcuum e h/et c f. arcuū b e/et a c quinta eſt pars. et vtriqꝫ arcus b e h/et a c f: obtuſos equilateri et equianguli penthagoni angulos b a h/et a b f ſubtendētes:ad arcus b e/et a c:rectis b a e/et a b c angulis ſubtenſos:vt ſex ad quinqꝫ/ſeſe habere probātur. Et arcus e h/et c f:arcuū b e h/et a b f ſunt ſexte. Anguli vero b a h/& a b f obtuſi: ad rectos b a e/et a b c ſeſquiquinti. Et minores anguli h a e/et c b f(vtriqꝫ equales)obtuſorū b a h/et a b f partes ſexte. rectorū vero b a e/et a b c quinte. Si itaqꝫ arcubus vtriſqꝫ b e/et a c:ad arcuū e h/et c f mēſurā:equaliter/in quinqꝫ equalia diuiſis:ad media ſectionis puncta/a pūctis a/et b quattuor recte linee ducātur: a puncto quidē a:a i/a k/a l/et a m. Ab ipſo vero b:b n/b o/b p/et b q. erit vterqꝫ rectorū angulorū b a e/et a b c:quinis angulis/equaliter diuiſus. quorū vnuſquiſqꝫ/āgulis h a e/et c b f erit equalis. Equales eni rectilineorū angulorū diuiſiones:minime ſecundū rectas lineas(eorum baſes)at magis ſecundū arcus/eoſdem angulos ſubtendentes faciende ſunt.



15 Si datum circulū in termino ſue diametri recta linea/medio ſui puncto cōtingat: fient ex vtraqꝫ parte duo anguli recti. quibus vtriſqꝫ in quiqꝫ equales angulos diuiſis: ſūptiſqꝫ hinc inde ex omnibus partialibus angulis tribus/atqꝫ tribus:et in toto quidē numero ſex/quattuor vero(vt duobus/et duobus)ex vtraqꝫ parte relictis:erit ex omibus ſex partialibus angulis/ſimul intra datū circulum collectis:angulus totus equilateri et equianguli penthagoni/dato circulo inſcribendi conſtitutus.

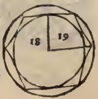


16 Ex inuento equilateri/equianguliqꝫ pēthagoni/dato circulo inſcribēdi primo angulo/circa eius diametrū conſiſtente:promptū eſt reliquū totum penthagonū/dato circulo inſcribere.

17 Si dati circulo/equilaterus et equiangulus inſcribatur penthagonus : a cuius quinqꝫ angulorū verticibus/quinqꝫ linee recte extra circulū/eūdem in eiſdē punctis contingentes/quātūlibet in partem vtrāqꝫ extendantur:earum vna queqꝫ aliis duabus ex neceſſitate occurret. omneſqꝫ ſimul:pēthagonū equilaterum et equiangulum definient. priori penthagono intra datū circulum conſcripto oppoſitum:ac eidem circulo/conſcriptum.



18 Si a dati penthagoni cētro : recta linea ad equale alicuius ſuorū laterū mediū producat̄ : ea erit prima ipſius penthagoni linea/primis iſopleuri/atqꝫ quadratilineis ꝓportionabilis. cuius interuallo/deſignatus in dato pēthagono circulus:eidem neceſſario eſt inſcriptus.

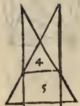


19 Si vero ab eodē dati penthagoni equilateri atqꝫ equianguli centro/recta linea

ad alicuius ſuorum angulorum verticem extenta fuerit : hec ipſius ſecunda
erit linea.cuius longitudine dimenſum circulũ: dato penthagono inſcriptũ
eſſe neceſſe eſt.

Vniformis penthagoni

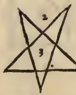
Omnis vniformis pẽthagonus:eſt in potentia aut omnifariam/aut aliqua ex 1
parte egrediens.



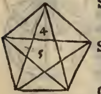
Impoſſibile eſt duo aliqua vniformis equilateri et equianguli penthagoni la= 2
tera:abinuicem equaliter diſtare.
Quelibet duo et duo equianguli penthagoni vniformis latera/nõ proxima/ 3
ſed medio diſtantia latere in exteriorẽ(quã verſus minus abinuicem diſtãt)
partem producta:tandem concurrent.
Rectus penthagonus:non omni ex parte/egredientiũ fieri poteſt angulorũ. 4
Recto pẽthagono/duo inſunt equidiſtãtia latera.quibus quãtũlibet in rectũ 5
baſim verſus extentis:nec ipſa quidẽ inter ſe/nec alia cum ipſis latera cõcur=
rent.Rectus penthagonus dicitur: qui ex quadrato/et eiuſdem lateris iſo=
pleuro conſtituitur.

Egredientis

Si recti penthagoni equidiſtantia latera:ſurſum in partẽ baſi oppoſitã/inde= 1
finite extendãtur:reliqua vero tria latera/vtrãq; in partem:fiet ex recto vni=
formi penthagono/egredientiũ quattuor tantum angulorum figura.



Cuiuſlibet equianguli vniformis penthagoni/ſi omnia latera exteriorem ex= 2
tendantur in partem:demũ mutua ſui offenſione/egredientium quinq; an=
gulorum penthagonũ regularẽ/equaliũ laterũ et angulorum:circa priorem
penthagonũ/deſcribent.
Cuilibet egredienti penthagono equilatero et equiãgulo:penthagonus vni= 3
formis/equilaterus et equiangulus eſt ex neceſſitate inſcriptus.



Si egredientis penthagoni equiãguli/omnes quinq; extremi anguli rectis li= 4
neis copulẽtur : erit circa ipſum vniformis/equiãgulusq; penthagonus de=
ſcriptus.
Si ab vtriſq; terminis/ſingulorũ laterũ vniformis equianguli penthagoni/due 5
recte linee ad oppoſitũ producãtur angulũ:egredientiũ angulorum pentha
gonũ equiangulũ definiẽt/dato vniformi penthagono inſcriptum.
Cuiuſlibet egredientis penthagoni/omnes quinq; anguli extremi:ſunt duo= 6
bus tantum rectis equales.

Hexagoni equilateri

Si deſcripto ſuper datam lineam quadrato:duobus eius oppoſitis lateribus/ 1
duo iſopleuri ſuperponãtur:naſcet̃ regularis hexagonus rectus/ſimpliciter
quidem equilaterus:non autem equiangulus.
Equilaterũ ſolum hexagonũ/circulo inſcribere/aut circũſcribere : aut eidem 2
inſcribere/aut circũſcribere circulum minime conuenit.
Omnis hexagonus rectus : ex quadrato/et duobus iſopleuris inter ſe/et eidẽ 3
quadrato equilateris:eſt compoſitus.
Omniũ rectorum hexagonorũ:quelibet duo et duo oppoſita latera/equidi= 4
ſtantia ſunt.
Recti hexagoni centrũ/nõ ab omnibus:ſed ab oppoſitis dũtaxat eius et late= 5

ribus et angulis equidiſtat.

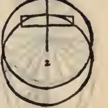
6 Omnes alij hexagoni a recto: ſimpliciter quidem equilateri/non autē equianguli: vt ex altera parte longiori/et duobus iſoſcelis: aut ex rhombo/aut trapezio/et duobus ſcalenis compoſiti: ſunt irregulares/atq; imperfecti.

Equianguli

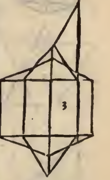
1 Omnis equiangulus hexagonus: eſt et equilaterus

2 Quo pacto ſuper datam lineam rectā/equilaterum et equiangulū hexagonū deſcribere liceat: oſtendere.

Sit data recta linea a b: ſuper quam equilaterus et equiangulus hexagonus eſt deſcribendus. que primū per equalia/in puncto c diuiſa: ab eo/ad ipſam educatur perpendicularis eidē equalis/ que ſit c d. cuius dimēſione/ſuper d centrum circūducatur circulus: qui lineam a b datam/neceſſario in c puncto continget. Rurſus ab a/et b punctis date linee extremis: due ſuper eādem producātur perpendiculares. que circūferentie deſcripti circuli/in duobus punctis e & f occurrant. inter que recta ducatur linea e f: in circulo/ſuper eius arcum conſiſtēs. Hanc manifeſtum eſt/date linee eſſe equalē. Sunt enim vtreq; a b/et e f equidiſtātes: inter lineas a e/et b f itidem equidiſtantes. Secet igitur linea e f/lineā c d: in puncto g. eritq; linea g e/chorde arcus e f/ſagitta: vtriſq; lineis a e/et b f equalis. Et a linea d g/tollatur d h/equalis g c. addaturq; c i/eidem equalis. Erit igitur tota linea/h i/linee d c/(deſcripti circuli ſemidiametro) item et linee date/a b equalis. linee enim/d c/et h i: linea h c media/cōmunicant. et d h/et c i reſidue linee ſunt equales. Quare & d c/et h i equales. linea vero/d c/linee a b date: poſita eſt equalis. erit ergo et linea h i: linee a b/date eq̄lis. Fiat itaq; cētrum h: quod circa linee h i ſpacio/circulus ducatur a i b. cuius circūferentia/neceſſario p pūcta a et b tendetur: datam lineam a b/non ſecans. eritq;/a b/ data linea: in circūferentia circuli/a i b/ cōſiſtēs/eius ſemidiametro equalis. et arcus a i b/arcui e c f: totuſq; circulus/a i b: toti circulo e c f equalis. Erit igitur linea a b data: hexagoni equilateri et equianguli/circulo a i b inſcribendi latus. Si itaq; circulo a i b/hexagonus equilaterus et equiangulus inſcribatur: erit ſuper datam lineam factum propoſitum. Et hec propoſitio/eam ſequitur: que dato circulo/hexagonū equilaterum et equiangulum inſcribendū oſtendit. Verū quia ſuper datam quālibet lineam q̄ dato circulo huiuſmodi hexagonū deſcribere, ſimplicius eſt: hinc illā prepoſuimus. ¶ Contingit tamen (et p prius/ priorīq; demonſtratione: at paulo quidē difficiliori) ſuper datam rectam lineam: ex recto et equilatero ſolum hexagono/equiangulum deſcribere hexagonū. inuento primū per recti hexagoni reſolutionem/eius centro. quemadmodum et prius ex recti penthagoni reſolutione: equianguli pēthagoni centrum/inueniri poſſe docuimus.

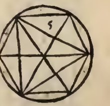


3 Dato recto hexagono ſimpliciter equilatero: equiāgulum hexagonum/eidē equilaterum aſſignare.

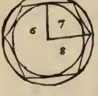


Sit datus rectus hexagonus/a b c d e f. cuius latera a b/et d c/quātūlibet in rectum extendo: in eā dem partem/quouſq; ſimul in puncto iungantur eodem/quod ſit g. Aufero de linea b g: lineam a b equalē/que ſit b h. et reſiduū h g: diuido per equalia/in puncto i. Deinde extendo duas lineas a e/et b d: quātūlibet in vtrāq; partem. et lineam duco c f. atq; a ſex punctis a/b/c/d/e/f: abſcindo ſex lineas/vtriq; duarum h i/et i g per ſe equales. que ſint a k/b l/c m/d n/e o/et f p. et ſex puncta k. l. m. n. o. et p: ductis totidem rectis lineis cōiungo. ſintq; recte linee/k l/l m/m n/n o/o p/et p k. q̄ queſitū ex neceſſitate hexagonū intercludunt equilaterū et equiangulum: datoq; recto hexagono a b c d e f equilaterum.

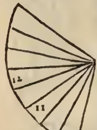
4 Cuiuſlibet circuli tota circūferentia: ſecundum ſue ſemidiametri q̄titatem/in ſex arcus equales eſt diuiſibilis. quibus ſingulis ſubtēſe chorde: hexagonū: equiangulum claudunt/dato circulo inſcriptum.



5 Si dato circulo/inſcribatur iſopleurus: a cuius centro ad ſingula iſopleuri latera/tres perpendiculares ad circūferentiā extendantur: erunt in dati circuli circūferentia/aſſignata ſex puncta/angulorum equiānguli hexagoni/dato inſcribendi circulo note/atq; ſigna.

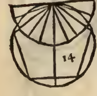


Si ab hexagoni equianguli centro: due recte linee vna ad eius angulum/ alia vero ad mediū latus equale ducantur: erit hec eius prima/illa vero ſecunda. 6
Circulus ſecundum prime linee equianguli hexagoni quātitatem/ſuper eius centrum deſcriptus: dato hexagono inſcriptus eſt. 7
Qui vero ſecundū linee ſecunde longitudinē ducitur: eidem neceſſario circūſcriptus approbatur. 8





Si dato circulo/hexagonus inſcriptus eſt equiangulus: atqꝫ ad ipſum circulum/ſex recte linee in vtrāqꝫ partem indefinite producātur: eūdem in verticibus angulorū/hexagoni eidem inſcripti contingentes: equiangulum hexagonum dato circulo circūſcribent. 9
Duo et duo quelibet latera/equiāguli hexagoni oppoſita: inter ſe equidiſtant. 10
Cuiuſlibet equianguli hexagoni: omnes ſex anguli/ſunt octo rectis equales. 11
Quilibet angulorū equianguli hexagoni: eſt vt vnius recti/octo ſexte: et ad quēlibet rectum/ſeſquitertius. 12
Quilibet vero rectus angulus: eſt vt ſingulorum equianguli hexagoni angulorum/octaue ſex. 13



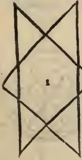
Si datū circulū recta linea medio ſui puncto/in termino diametri contingat: diuiſa vtroqꝫ rectorum angulorum ad contactum conſiſtentiū/in ſex partes equales: et ex vtriſqꝫ ſumptis intra circulum/quattuor partialibus angulis: omnes ſimul octo/hexagoni equianguli dato inſcribendi circulo angulum/continebunt. 14

Hexagoni vniformis

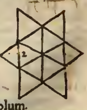


Omnis hexagonus vniformis: eſt in potentia egrediens. 1
Cuiuſlibet vniformis hexagoni: duo et duo latera/alternatim vno tantū interſtite latere diſtantia: extrinſecus in rectū protenſa/cōueniūt. in alteram vero partem/quātūlibet producta: nunq̄ concurrent. 2
Nullius hexagoni vniformis: duo et duo oppoſita latera (que duorū laterum interſtitio diſtāt) et quātūlibet vtrāqꝫ in partem extendātur: ſibi mutuo coaptari contingit. 3

Egredientis



Si recti hexagoni/duo et duo quelibet tertio abinuicem loco diſtantia latera producantur: fiet circa ipſum/hexagonus inequaliter egrediēs: inequalium laterum/et angulorum. 1



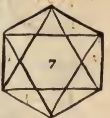
Si vero equianguli et vniformis hexagoni: quelibet duo et duo (tertio diſtantia loco) latera exteriorem in partem extendantur: circa vniformē datū hexagonū/aliū hexagonū cōcludent: equaliter egredientē/equilaterū/et equiāgulū. 2
Si ſingula vniformis et equianguli hexagoni latera/extrinſecus (quoad concurrant) extendantur: erit vnūquodqꝫ latus totaliter vtraqꝫ ex parte productum/ad prius latus triplum. 3
Omnis hexagonus equaliter egrediēs: eſt circa hexagonū vniformē/et equi= 4

angulum conſtans.

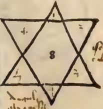
5 Singula egredientis equaliter hexagoni latera: ſingulis eius (circa quē cōſtat) hexagoni lateribus tripla ſunt. totus vero egrediens: toti vniformi duplus.

6 Equaliter hexagonus egrediens: vniformi (circa quem conſtat) hexagono ſex ſuperaddit iſopleuros. omnes quidē et inter ſe/ et reliquis ſex iſopleuris (ex quibus vniformis hexagonus/ circa quem conſtat: eſt compoſitus) equales.

7 Si ſingulos egredientis equaliter hexagoni/ angulos: ſex recte linee in eorum verticibus complectantur: fiet hexagonus vniformis equiāgulus/ circa egredientē hexagonū deſcriptus: eidē ſeſqualter/ interiori vero vniformi triplus



8 Si duobus iſopleuris equalibus cōtrarie ſibiinuicē applicatis/ circūquaqꝫ ſex partiales iſopleuri incōmunicantes et adinuicē equales promineant: neceſſe eſt ex vtriſqꝫ/ hexagonū equaliter egredientiū angulorum eſſe cōſtitutum.

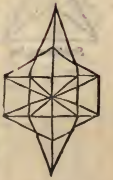


9 Cuiuſlibet egredientis equaliter hexagoni: omnes ſex anguli extremi/ ſunt quattuor rectis equales.

10 Egredientis equaliter hexagoni/ extremi anguli: ſinguli angulis trigoni iſopleuri equantur. ſuntqꝫ vt vnius recti/ due tertie.

Cetere autē pariū numero angulorum/ et laterum figure: ex ſimplicioribus duplo pauciores angulos/ et latera habētibus deſcribi poſſunt. veluti ex trigono iſopleuro/ equiangulus hexagonus. ex quadrato: octogonus equiangulus. ex penthagono equiangulo: equiangulus decagonus. et rurſus ex equiangulo hexagono: dodecagonus equiangulus. et ita deinceps.

Omnes vero impares impariū numero laterum/ et angulorum: aut per ſe/ aut aliquo pacto ex figuris prioribus (propter diuiſionis linee recte imparis difficultatem) difficilius cognoſcūtur: veluti heptagonus/ ennagonus/ endecagonus/ et ſimiles. Ceterum ad omnes poſt trigonū iſopleurū/ et quadratum figuras/ equaliū et laterum et angulorū: per rectas ſue ſpeciei figuras (laterū dūtaxat equalium/ inequaliū vero angulorum) vnus eſt procedendi modus. Eſt enim rectū habitum: cōtinuo ſui obliqui index. Omnis autē equilatera/ et equiangula figura: ab ea que ſolum equilatera eſt/ ſibi ſimili (que et recta dicitur) ſecundum circuli arcum/ ex vtraqꝫ parte inflectitur. quemadmodum prius in penthagono/ et hexagono fieri oſtendimus. Quare aſſignata per ſe recta vniuſcuiuſqꝫ (poſt tetragonū) ſpeciei figura: ex ſuorū laterū in vtrāqꝫ partem (ſecundū equales equalium circulorum arcus) depreſſione: cōtingit equilatere et equiangūle/ eiuſdem ſpeciei figure adinueniri centrum. quo in recta figura aſſignato: promptiſſimū eſt reliquā figurā equilaterā et equiangulam inuenire: date recte/ ſibi conſimili/ ſueqꝫ ſpeciei figure: equilaterā. Et in pleriſqꝫ figurarū ſpeciebus: recte ſimpliciter equilatere figure/ et alterius eiuſdē ſpeciei equilatere et equiangule: idem eſt numero centrum. quod in hexagonis accidit. Dato eni recto hexagono: duobus eius angulis (qui maxime abinuicē diſtant) ad mediū ſecundū eandem rectam lineam deflexis/ ac ſibi mutuo/ et medio propinquantibus: continuo duo eius latera equidiſtātia/ equaliter in vtrāqꝫ partem/ longius a medio ſecedunt. quoaduſqꝫ omnes



date figure anguli: in equalitatem redacti ſint, factiq́ equales. et hexagona equiangula figura: ex priorum equilatera data relinquatur. Sunt eni in hexa gono recto, ad equiangulum hexagonũ habendum: vtreq́ linee acceſſus, duorum maxime diſtantium angulorum ad medium: vtriſq́ lineis, quibus duo equidiſtantia latera ſimul a medio eodem recedunt: equales. quãtuſq́ eſt angulorum maxime diſtantiũ ad medium acceſſus: tantus eſt et laterũ equidiſtantiũ (que primũ maxime medio propinquant) ab eodem medio, in vtrãq́ partem receſſus. Rectas aũt in vnaquaq́ ſpecie figuras: ex quadrato, et trigonis iſopleuris, aut iſoſceliis ipſi q̃drato circũpoſitis: deſcribere licet.

Geometrici introductorij quinti libri finis.

GEOMETRICI INTRODVCTORII

liber ſextus. De corporibus.

¶Corpus	Sphera	Rotunda
Indefinitum	pyramis	Laterata
Finitum	Columna	¶Laterata
¶Indefinitum	Cubus	Trigona
Angulus ſolidus	Octocedron	Tetragona
¶Angulus ſolidus	Dodecedron	¶Columna
Rectus	¶Sphera	Rotunda
Obtuſus	Solida	Laterata
Acutus	Concaua	¶Laterata
¶Finitum	¶pyramis	Trigona
Figura	perfecta	Tetragona
¶Figura	Curta	

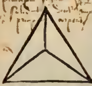
Diffinitiones corporum

Quid corpus: in ſuperioribus libris diffinitum eſt.

Corpus indefinitum: eſt quod aliqua ex parte, interminatum relinquitur.

Finitum vero: quod omniquaq́ ſuperficie vna, aut pluribus terminatur.

Indefinitorum



Solidus angulus.

Angulus ſolidus, ſiue corporeus: eſt qui pluribus, q̃ duobus planis angulis: nõ in vna ſuꝑficie ſitis, et ad vnũ cõmune punctũ concurrẽtibus cõtinetur. plures autẽ ſuperficies, in vna eadẽq́ ſuperficie ſite dicũtur: cum ad ſeinuicẽ directe ſunt. ¶Et hec eſt ſolidi anguli diffinitio: quem dũtaxat plani anguli claudũt. Sunt vero et alij duo angulorum ſolidorum modi: veluti curuorũ ſimpliciter, et mixtorum. Angulus eni ad rotunde pyramidis verticem cõſtitutus: ſolidus quidem eſt, et quẽ vna tantum orbicularis continet ſuperficies. et is curuus ſimpliciter dicitur. Similiter et angulus, qui eidem pyramidi ad baſim ineſt: et rurſus colũne, ad vtraſq́ baſes: eſt ſolidus. altera quidem plana, altera vero orbiculari ſuperficie contentus. Et mixtus dicitur. Rectus angulus ſolidus dicitur: cuius omnes tres ſuꝑficies, ſibiinuicẽ ortho

gonaliter inſiſtunt. Obtuſus vero: qui eſt recto maior. Acutus vero: qui recto minor eſt.

Finitorum

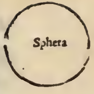
Figura eſt que ſuperficie vna/vel pluribus: omniquaqꝫ clauditur.

Figurarum

Sphera eſt corpus rotūdū: quod ſemicirculi arcus/ circa fixā ipſius diametrū latus deſcribit. Ipſius autem ſemicirculi diameter: ſphere axis dicitur. pyramis eſt corpus: quod ab amplitudine ſue baſis/equaliter i vnius verticis acumen tendit. Colūna eſt: quā perpendicularis plane figure motus/gignit Cubus eſt quem ſex parallellograme ſuperficies inter ſe equales/equidiſtantes/et perpēdiculares definiūt. Seu quē ductus in ſeipm quadratus gignit. Octocedron: eſt quod octo equis ſuperficiebus/clauditur. Dodecedron vero: quod duodecim. Et eadem proportione: cetere deinceps corporee figure/ſecundum ſuarum ſuperficierum/et angulorum numerum diffiniende ſunt.

Spherarum.

Sphera ſolida: eſt que a circūferentia/ ad centrum tota ſimili corpore plena eſt et continua. cui ve nulla actu/ concaua ineſt ſuperficies. Sphera cōcaua eſt cui due ſuperficies/actu inſunt. cōcaua interior: exterior vero conuexa.



Sphera

Sphera cōcaua
Sphera ſolida



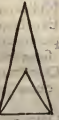
pyramidum

pyramis perfecta: eſt que ad conū vſqꝫ/ſupremūqꝫ ſui verticem eleuatur. Curta vero: que citra conum deficit. Rotunda autem: cuius circulus eſt baſis. Laterata vero: que multilaterā figuram baſim habet.

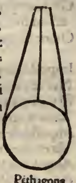
Lateratarum pyramidum

pyramis trigona: eſt q̄ a triangula ſupficie/ſurſū in acumē tēdit. Tetragona vero cuius baſis/imaqꝫ ſuperficies eſt quadrāgularis. Et hoc pacto pyramides penthagone/ hexagone/ heptagone/et cōſequentes diffiniantur. Sunt eni pyramidū ſpecies/vt et planarū figurarū. ac totuplices pyramides/ quotuplices et figure. Et rurſus ſecundū vniuſcuiuſqꝫ figure ſpeciē: multipliciter iterū et pyramides dicuntur. quemadmodū et ipſe figure: ſingule in ſuis ſpeciebus/ſunt diſtincte.

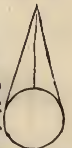
Trigona



Curta



Rotūda pfecta



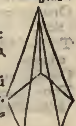


Tetragona



Trigona

Pēthagona



Columnarum

Colūna rotunda: eſt cuius vtreqꝫ baſes/duo ſunt circuli. Laterata vero: cuius baſes/multilatere ſunt figure.

Lateratarum

Colūna trigona: eſt cuius extreme baſes/ſunt triangulares. Tetragona vero: que quadrangulis baſibus/diſtenditur. Et hūc in modum lateratas colūnas: per ſingulas planarum figurarum ſpecies diuiſas/licet diffinire.

Sunt autem et alie multe irregularium corporum ſpecies: quorū ob incertitudinem/atqꝫ inequalitatem determinatio relinquitur. Et quecūqꝫ de lineis/et ſuperficiebus adalterū dictis/in ſuperio=

Tetragona



Colūna rotūda.



ribus libris adducta ſūt: pari quoq; modo ipſis etiā corporibus coaptātur. Linearum enim, ſuperficierum, et corporum: proportionabilis eſt ſcientia.

Diffinitorum proprietates

Corporis

Omnium magnitudinū: ſolum corpus, conſtat eſſe perfectum. 1
Omniquaq; corpus, eſt diuiſibile. 2
Corpori preter eius eſſentiam: tres termini inſunt: punctū, linea, et ſupficies. 3
Corporis numerus eſt quaternarius: magnitudines conſūmans omnes. 4
Nulla corpore, poſterior eſt magnitudo. 5
Non vbiq; in corpore: ſunt ſuperficies, linee et puncta. 6
Corpori dūtaxat in ſuis extremitatibus, inſunt ſuperficies: et in extremis ſuperficierum, linee: atq; linearum in extremis, puncta. 7
Omne ſpaciū, quod omniquaq; aliquod punctum in ſolido et corpore circūſtat: eſt octo ſolidis rectis angulis equale. 8

Indefiniti

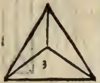
Nullum corpus: ſimpliciter, et ex ſua natura eſt indefinitum. 1
Ex nobis (noſtri cogitatione intellectus) corpus fit indefinitum. 2
poſſumus corpori: aut actu nullam, aut tātum vnam, aut duas, aut tres ineſſe ſuperficies intelligere. 3
Omne corpus non rotundum: cui noſtra cogitatione aut actu nulla, aut pauciores q̄ quattuor inſunt ſuperficies: eſt indefinitum. 4

Finiti

Omne corpus, natura finitum eſſe conſtat. 1
Omni corpori non rotundo: propria nature determinatione, quattuor actu inſunt ſuperficies. 2
Omne finitum actu corpus: eſt figura. 3

Anguli ſolidi

Impoſſibile eſt lineas ſolas: angulum ſolidum continere. 1
Nec vna tantum, nec due ſuperficies: angulum claudere ſolidum poſſunt. 2
Quecūq; ſuperficies, angulum excipiunt ſolidum: ſubtēta eidē angulo baſi, fiunt triangulares: ex angulo vero, pyramis fit. 3



Impoſſibile eſt ſuperficies angulum ſolidum continentes: eſſe aut adinuicem directas, aut equidiſtantes. 4
Anguli ſolidi baſis: eſt vna ſola ſuperficies. 5
Angulus ſolidus: eſt ſolide figure poligonie principium. 6
Omnes anguli plani, ſolidum continentes angulum: ſunt contermini, et continui. 7
Totius ſolidi anguli, et omniū planorum ipſum continētium, vertex conuſq; eſt vnus. 8
Omnis angulus ſolidus: quattuor rectis ſolidis angulis, minor cōprobatur. 9
Totum ſpacium: quod aliquod punctum, in ſolido circūſtat: aut ſex angulis ſolidis obtuſis, aut octo rectis, aut decem acutis eſt equale. 10

11 Quotquot anguli ſolidi fuerint ſuperficies : ſubtēta eidem baſis/totuplicem pyramidem complebit.

Recti

1 Tres tantum anguli plani/rectum angulum ſolidum continentes: ſunt neceſſario recti.

2 Si ſolidū angulum rectum recta linea/aut ſuperficies plana contingat: impoſſibile eſt eādem/alteri ſuperficierum ipſum continentium eſſe perpendicularem/directam/aut equidiſtantem. Linea vero/aut ſuperficies angulum cōtingere dicitur: que eius vertici applicata/eundem non ſecat.

3 Si recto ſolido angulo/tribus planis angulis cōtento ſubtendatur baſis: erūt omnes tres plani anguli ipſum continentes/trigoni orthogonij.

4 Omnes ſolidi anguli recti: ſunt equales

5 Si plana ſuperficies: ſolidum angulum rectum/tribus planis definitum contingens/fuerit eius baſi equidiſtans : et linea ab ipſius anguli vertice/ad ſue baſis centrum producta: fuerit et baſi/et contingenti ſuperficiei perpēdicularis: erunt omnes orthogonij dictum angulum continentes/omneſq; eius coſte equales. Inſuper et eius baſis trigonus iſopleurus.

6 Si recto angulo ſolido/ſubtēdatur baſis: impoſſibile eſt planorum ipſum cōtinentium angulorum/aliquem fieri iſopleurum. eorum autem vnū tantū/et rurſus omnes iſoſcelios fieri contingit. Similiter et duos/et omnes ſcalenos. tantum vero vnū/fieri ſcalenū minime.

7 Si ab aliqua coſtarū ſolidi anguli recti/ſuperficies ad oppoſitā ipſi coſte ſuperficiem producta/eidem orthogonaliter inſiſtat : ipſum angulum neceſſario per equalia ſecabit.

8 Omniū ſolidorum angulorum rectorum: qui tribus tantū planis continetur/ eſt primus. et eſt/cuiuſlibet cubi principium.

9 Cetera de ſolido angulo recto: his que de plano recto angulo dicta ſunt/proportionantur.

Obtuſi

Obtuſus ſolidus



1 Anguli ſolidi obtuſi: cōtingit planorum angulorum ipſum continentiū/vnū tantum eſſe obtuſum. Et rurſus duos/atq; item tres. plures autem minime.

2 Contingit angulos planos/potētia infinitos ſolidum angulum obtuſum cōtinere.

3 Si ſolidum angulum obtuſum/tres plani contineant anguli : impoſſibile eſt omnes eſſe rectos/aut acutos.

4 Si fuerint omnes anguli plani/ſolidum angulum obtuſum continētes acuti: erunt neceſſario tribus plures.

5 Si tres plani anguli/ſolidum angulum continētes fuerint equales/inſuper et eorū coſte: erunt omnes ambligonij. angulo vero ſolido/ſubtenta baſis: erit iſopleurus.

Acuti

Acutus ſolidus



1 Solidus angulus/tribus planis angulis acutis contentus : eſt ex neceſſitate acutus.

2 Impoſſibile eſt anguli acuti ſolidi: planorum angulorum tres rectos/aut obtuſos eſſe.

Contingit ſolidum angulum acutum: vnũ circa ſe planũ angulum obtuſum 3
habere.

Contingit item ſolidũ angulũ acutũ: duos planos habere rectos et obtuſos. 4

Angulum ſolidum acutum: infinitis potentia planis angulis acutis/terminari 5
poſſe conuenit.

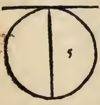
Si fuerint tres anguli plani/ſolidũ angulum continentes conſimiles/et equa= 6
les: erit eiuſdem baſis/iſopleurus trigonus. Si vero quatuor: quadratus aut rhõbus. Si quinq͂: equilaterus/et equiãgulus pẽthagonus. Et ita deinceps.

Figurę.

Eedem ſunt figure proprietates/et corporis finiti. Nam et omnis/et ſola ſo=lida figura: eſt corpus actu natura/nobiſq͂ finitum.

Sphere

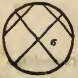
Vniuerſę circulorũ proprietates: ſunt et ſphęrarũ. Nam quod in planis/circulus: hoc in ſolidis/eſt ſphera. Eſt eni planarum figurarũ: circulus/principiũ. ſolidarum verò/ſphęra. Et quod rurſus ad circulum/centrum: hoc idem ad ſphęram/eius axis eſſe comperitur. Et quo pacto circulorũ portiones diuiſę ſunt: ita et ſphęrarum (in maiorẽ/mediam/atq͂ minorem) diuiduntur. quarũ proprietates: portionũ circuli proprietatibus/reſpondent.



Inſuper et diameter/ad circulũ: et ad minorẽ eius portionem/chorda: ſunt ad ſphęram totam/duo circuli: vnus qui eãdem in duo ęqualia partitur: in quo ipſius ſedet axis. alter verò priore minor: qui eãdem inęqualiter ſecat/ extre=mas eius portiones maiorem/minoremq͂ dirimens:

Impoſſibile eſt in circũferentia ſphęrę: rectam lineam deſignare. 1

Si plana ſuperficies/ſphęram ſecet: erit eius pars/ab eadem ſphęra intercepta 2
circulus.

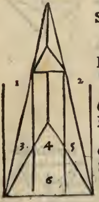


Omnium duarum ſphęrarum, vnius/ad alteram proportio: eſt tanq͂ diametri 3
ad diametrum proportio triplicata.

Omnis circulus in ſphera conſiſtens/eidem concentricus: eſt eius diameter. 4
eccentricus verò: extremarum portionum maioris/et minoris chorda.

Si recta linea/aut plana ſuperficies ſphęram contingat: in vno tantũ puncto 5
contingit. a quo recta linea perpendicularis/in ſpheram deſcendens: per eius centrum/neceſſario tranſit.

Duabus lineis rectis: in data ſphęra/aut eius portione productis: erit linearũ 6
vtriſq͂ perpẽdiculariũ/cõmunis ſectio: datę ſphęrę/aut ſuę portionis cẽtrũ.



pyramidis

Omis ſupficies in pyramide cõſiſtẽs/eius baſi equidiſtãs: eſt ipſa baſi minor. 1

Impoſſibile eſt ſuperficies extremas/ipſam pyramidem circũſtãtes: eius baſi 2
orthogonaliter inſiſtere.

Omnis angulus ſolidus: ad pyramidis baſim conſiſtens/eſt acutus. 3

Si in pyramide/ſupficies eius baſi ęquidiſtat: ab eius extremitatibus/plures 4
lineę rectę ad baſim perpendiculares pductę: baſis extremitatibus minime applicantur.

5 Si quotlibet rectę lineę/aut planę ſupficies:ab extremitatibus baſis pyramidis/ſuper eandem orthogonaliter in partem verticis/extendantur:eas extra pyramidem/cadere neceſſe eſt.

6 Quotlibet ſuperficies/in pyramide eius baſi equidiſtātes/ad ſingula vſq; latera productę:ſunt eius baſi ſimiles.

7 Omnes pyramides ęqualiū baſium/et altitudinū: ſunt ſibiinuicem ęquales.

8 Supremū pyramidis angulum : et rectū /et acutū/et obtuſum contingit eſſe.

9 Si fuerit pyramidis axis/ſuę baſis axi ęq̄lis: erit eius angulus/ad conū rectus. Si maior:acutus. Si verò minor:obtuſus.

Columnę



1 Cuiuſlibet columnę regularis : vtreq; baſes ſunt ſimiles/ ęquales/ et ęquidiſtantes.

2 Si quotlibet ſuperficies : in data colūna/ab extremis eius baſibus ęquidiſtēt: erunt et ipſis baſibus/et ſibiinuicem ęquales/et ſimiles.

3 Omnes ſolidi anguli/ ad vtriuſq; columnę baſes : recti ſunt/ et adinuicem ęquales.

4 Superficies colūnę laterales:vtriſq; eius baſibus/perpendiculares ſunt.

5 Vtrarūq; colūnę baſium:eadem eſt perpendicularis/eadem obliqua/ et eadē ęquidiſtans: diuerſę autem vtriſq; directę.

Cubi

1 Omnis cubus:ſupficies habet ſex/ſolidos verò angulos octo/et coſtas duodecim.

2 Omnes extremę cubi ſuperficies/ſunt quadrati:quorum latera/ſunt et ipſius coſtę.

3 Omnis cubus:eſt extremę ſuę ſuperficiei potentia.extrema verò eius ſuperficies:eſt ſuę potentia coſtę.

4 Id eſt cubus:quod poteſt eius quadratus.et id quadratus:quod poteſt eius latus.

5 Omnes eiuſdem cubi coſtę:et extremę eius ſuperficies/ſunt inter ſe ęquales.

6 Vnaqueq; extremarum cubi ſuperficierum:alteri vni ſibi è regione oppoſitę/eſt equidiſtans:et cęteris quattuor perpendicularis.

7 Si ab vnius quadratorum(cubum circūſtantium)diametro:ad oppoſiti quadrati diametrum/plana extendatur ſuperficies:ipſum cubum/per ęqualia ſecabit:eritq; ipſius diameter.

8 Impoſſibile eſt cubi diametrum:eſſe quadratum.

9 Cubi diameter eſt parallellogrāma ſuperficies:cuius duo latera/ſunt oppoſitorum quadratorū diametri:reliqua duo/oppoſitorum itidem quadratorum coſtę.

10 Diametri cubi diameter:omniū ſuorum quadratorum diametros/vincit.

11 Si dati cubi diameter/in ſeipſam ducatur:naſcetur cubus/dato cubo duplus.

12 Si in cubi diametro:due recte lineę/ad oppoſitos duos et duos eius angulos producantur:erit cōmunis earum ſectio/cubi centrum.

Cubus/ſpherè:et ſphera/cubo:inſcribi/et circūſcribi poteſt. hec vero inſcri= ptio/et circūſcriptio:circuli et quadrati iſcriptionibus/circūſcriptionibuſqꝫ reſpondet. 12

Octocedri et dodecedri.

planis figuris octogono/ et dodecagono : octocedron/et dodecedron pro= portionantur. 1

Trigone pyramidis equilatere et equiāgule: omnes quattuor anguli/in equa litatem mediorum laterū reſoluti/octocedron corpus/ equiāgulum pariūt. 2

Cubi omnes anguli:in mediorum ſuorum laterum equalitatē/reſoluti : do= decedron corpus/equilaterum et equiangulum gignūt. 3

Octocedron/trigone pyramidi:dodecedron vero/cubo:laterum/et angulorū numero duplus comprobatur. 4

Solide ſphere

Omnis ſolida ſphera:vna tantum actu ſuperficie clauditur: 1

Omnis ſphera ſolida:eſt alterius corporis incapax. 2

In ſphera ſolida:nichil moueri contingit. 3

Sphere ſolide:vacuū ſimili corpore/nullum ineſt. 4

Concaue

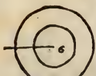
Omni concaue ſphere/due actu inſunt ſuperficies:quarum exterior conuexa/ interior vero concaua eſt. 1

Tota concaue ſphere moles : extremis eius ſuperficiebus/concaua cōuexaqꝫ ambitur. 2

Impoſſibile eſt ſphere concaue centrum:eius ſoliditati ineſſe. 3

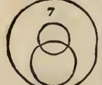
In concaua eius ſuperficie:quodlibet corpus inſcribi/moueriqꝫ contingit. 4

Concaue ſphere(ad conſummandam eius plenitudinem)ſolida ſphera deeſt. 5



Si vtriſqꝫ concaue ſphere ſuperficiebus/eadem fit perpendicularis:ea quātū= libet producta per vtriuſqꝫ centrum neceſſario tranſit. 6

Si concaue ſphere vtreqꝫ ſuperficies/diuerſa habeāt centra/ipſaqꝫ ſphera mo= ueatur:neceſſe eſt vnius ſuperficiei cētrum/circa alterius centrū circulariter moueri.ſuoqꝫ motu/ circa ipſum deſcribere circulum : cuius ſemidiameter/ erit vtrorūqꝫ centrorum diſtantia. 7



Si concaue ſphere corpus inexiſtens/concauam eius ſuperficiem circūquaqꝫ contingat:erit ipſum corpus/neceſſario ſphera. 8

Impoſſibile eſt concauas ſpheras ſeſe cōcauis ſuis ſuperficiebus contingere. 9

Si fuerint concaue ſphere/ambe ſuperficies concētrice:quecūqꝫ linea vni ea= rum perpendicularis erit/erit et alteri. 10

Si concaue ſphere interior ſphera inſit cōcauam eius ſuperficiem circūquaqꝫ contingens:ipſa vero cōcaua ſuperficies/eccētrica cōuexe : erunt et vtrarūqꝫ ſpheramm exterioris/atqꝫ interioris centra diuerſa/et econtrario. 11

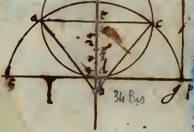


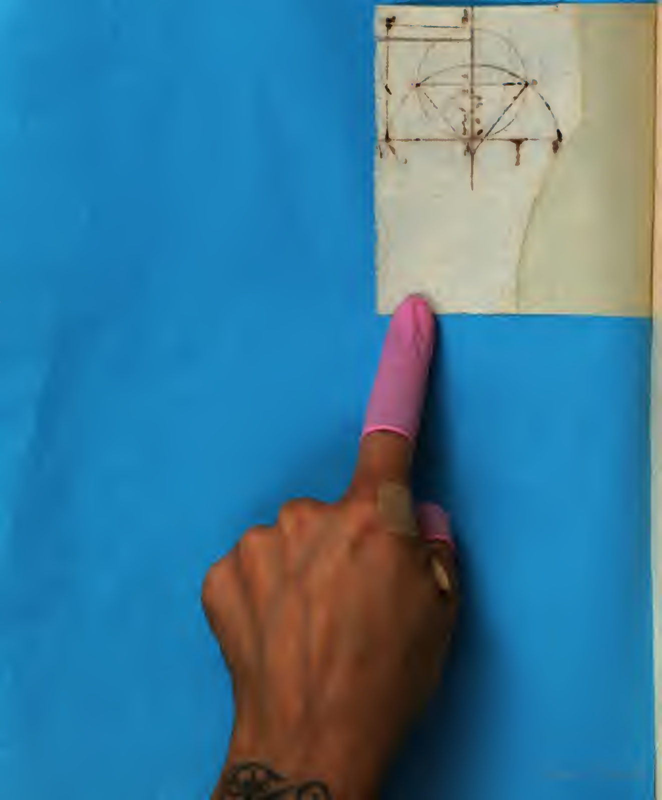
pyramidis perfectę

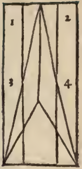
perfectę pyramidis:pars ſuprema/in punctum deſinit. 1

pyramidi perfectę:ſurſum nulla ſuperficies ineſt. 2

perfectę pyramidis latera/ſurſum in rectum protenſa:cōtinuo in eius vertice 3


34 Bis





ſeinuicem ſecant. fitq̧ ſupra conū/alter angulus ſolidus : angulo pyramidis oppoſitus/et eidem equalis.

4 Super perfectę pyramidis baſim/due perpēdiculares eius altitudini equales: aut in totum/aut partim extra ipſam pyramidem cadunt.

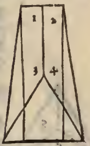
Curtę

1 Omni curtę pyramidi:ad ſui complementum/deeſt perfecta pyramis.

2 pyramidis curtę:non omnia latera/ſimul concurrunt.

3 Omnis curta pyramis:eſt ſecundum potentiam/perfecta.

4 Super curtę pyramidis baſim : duas perpendiculares/eius altitudini equales contingit eidem pyramidi totas ineſſe.



Rotundę

1 Orthogonij trigoni:altero laterū rectū angulum ſubtendentiū fixo/reliquis verò duobus circa idem(quouſq̧ ad locum ſuū redeant)ductis: erit corpus eo motu deſcriptum/rotunda pyramis.

2 In deſcriptione rotundę pyramidis: fixum orthogonij trigoni latus/eſt eius axis.

3 Orthogonij trigoni latus:rotūde pyramidis axi/imo puncto cōmune eſt ſue baſis ſemidiameter/eādem baſim ſuo motu deſcribens. latus vero eiuſdem axi ſupremo puncto cōmune:ipſius pyramidis circūferentiā/ſua latione deſcribit.



4 Cuiuſlibet rotunde pyramidis baſis/eſt circulus:eius verò circūferētia/ſuperficies orbicularis.

5 Superficies rotunde pyramidi inexiſtens/eius baſi inequaliter diſtans:circulus minime eſt.

6 Omnes ſuperficies/baſi rotunde pyramidis equidiſtātes:ſunt circuli/inter ſe inequales.

7 Omnis pyramis rotunda:eſt ſuę colūnę/pars tertia.

8 Orthogonius iſoſceles/i gyrū circa latus ꝓpriū ductus:rotūdā pyramidē deſcribit. cuius baſis diameter:eius axi/dupla: eiuſq̧ latitudo/altitudini dupla

9 Si rotundę pyramidis axis:fuerit ſue baſis ſemidiametro/ęqualis:erit eius angulus/ad conū rectus. Si verò maior/acutus:ſi minor/obtuſus

Laterate.

1 Omnis laterata pyramis : quaternario(ad minus)ſuperficierum/ſolidorū angulorum/et coſtarum numero determinatur.

2 Si plana multilatera figura/fuerit date pyramidis baſis: erit data pyramis laterata/equalium numero laterum/et angulorum.

3 Laterata pyramis:omnibus lateribus ſuper baſim erectis/ipſam baſim ſuperaddit. omnibus vero ſue baſis angulis:propriū ſui verticis angulum.

4 Omnis pyramis laterata:vno plures habet baſes/et angulos:ſua baſi.

5 Laterata omnis pyramis:eſt ſue laterate colūne/tertia pars.

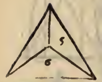
6 Omni laterate pyramidi:rotundam inſcribere/et circūſcribere contingit.

7 Cuiuſlibet laterate pyramidis:omnia latera/triangula ſunt.

Omnis laterata pyramis: tot ſolidos habet angulos/quot et (enumerata baſi) 10
ſuperficies.
Si trigoni orthogonij latus fixum: lateri baſim pyramidis rotunde deſcribēti 11
fuerit duplum: erit deſcripte pyramidis longitudo/latitudini equalis.
Rotunde pyramidis axis/eius eſt lōgitudo: latitudo vero/ſue baſis diameter.
Omnes lateratarum pyramidum ſpecies: planarum figurarū poligoniarum 12
ſpecies/conſequūtur.

Trigone

Si trigone pyramidis baſis/fuerit iſopleurus: erunt reliqui trigoni ipſam con 1
tinentes aut iſopleuri/aut iſoſcelij.
Omnis trigona pyramis/quā quattuor continent iſopleuri: eſt equilatera/et 2
equiangula.
Trigona quoq; omnis equilatera et equiangula: quattuor iſopleuris/neceſſa 3
rio continetur.
Si ab equilatere et equiangule pyramidis baſis centro: recta linea ad oppoſitū 4
angulum/orthogonaliter extendatur: erit dicte pyramidis axis/eius altitu-
dinem dimetiens.



Trigona Pyramis

Trigone pyramidis equilatere et equiangule: quilibet ſolidorum angulorū/ 5
eſt acutus: tribus planis iſopleuri angulis/equalis.
Si tres trigoni ſup triāgule pyramidis baſim erecti/ſint orthogonij: erit eius 6
vertex/ſolidus āgulus rectus. Si vero āblıgonij/obtuſus. Si oxigonij/acutus
Si in trigona pyramide equilatera et equiangula: duo/aut plures eiuſdē pro- 7
tendantur axes: erit cōmunis omniū ſectio/equale eorū mediū: ac eiuſdem
pyramidis centrum.
Omnis pyramis trigona: quattuor tantum trigonis continetur: ſex coſtis/et 8
ſolidis angulis quattuor.
Tot ſunt triangularium pyramidum ſpecies: quot et trigonorum. 9
Trigona pyramis/et ſphera: iuxta trigoni/et circuli modū: mutuo ſibi inſcri- 10
buntur/et circūſcribuntur.

Tetragone



Quadratus

Omnis tetragona pyramis: quinq; ſuperficiebus clauditur/totidē ſolidis an- 1
gulis/coſtis vero octo.
Tetragone pyramidis quinq; ſuperficierum: ſola baſis/tetragona eſt: cetere 2
vero triangulares.
Contingit tetragone pyramidis baſim: quadratum/rhombū/rhomboidem/ 3
altera parte longiorem/trapezıūq; eſſe.
Tetragone pyramidis equilatere et equiangule baſis: eſt quadratus. linea ve 4
ro recta ab eius vertice/ad ſue baſis centrum producta: eidem baſi eſt perpē
dicularis.
Si due equalium altitudinum tetragone pyramides: altera ſuper quadratum/ 5
altera vero ſuper rhombum (eidem quadrato equilaterum) collocentur: erit
ſuper rhombum conſiſtens/minor.

Columne rotunde.

Cuiuſlibet colūne rotunde: baſes vtreq; ſunt duo circuli/inter ſe equales. 1

2 Colūne circūferentia/eſt orbicularis ſuperficies:circa eius axem producta/et ab eodem omniquaqꝫ equidiſtans.

3 Omnes circulorum circūferentie/in columne circūferentia conſiſtentes: ſunt equidiſtantes/et equales.

4 Omnis rotunda colūna/ſuperficies tres habet:duas quidem planas/et vnam orbicularem. Inſuper et duas coſtas:que ſuarum ſunt baſium/circūferentie

5 Si parallellogrāmi rectāguli aliquo latere fixo/reliqua eidē latera circūducā=tur:rotundā neceſſario colūnā deſcribēt. cuius axis/erit recti parallellogrāmi latus fixum. duo vero latera axi cōtermina: vtrarūqꝫ baſiū ſemidiametri.

6 Circūductus ſuo lateri quadratus/rotundam deſcribit colūnam : cuius lati=tudo/ſue longitudini dupla exiſtit.

7 Si circūducti ſuo lateri altera parte longioris fuerit latus fixū/vtriſqꝫ conter=minis ſibi lateribus duplū:erit deſcripte colūne latitudo/lōgitudini equalis

8 Omnes linee recte/in rotunde colūne circūferentia : eius vtriſqꝫ baſibus ſunt perpendiculares/et inter ſe equales/et equidiſtantes. Curue vero: et inter ſe/et vtriſqꝫ eius baſibus equales/et equidiſtantes.

9 Omnes recte linee : ſuper alteram baſium colūne rotunde/perpendiculares: ſunt equidiſtantes/et in eius circūferentia conſiſtentes.

10 Omnis colūna rotunda: ſue rotunde pyramidi/comprobatur eſſe tripla. eius vero orbicularis ſuperficies : orbiculari ſue pyramidis ſupficie/et diameter diametro dupla.

11 Colūne rotunde diameter: eſt parallellogrāmus/circūducto parallellogrāmo eādem colūnam deſcribenti duplus.

12 Rotunde vero colūne diameter: pari quoqꝫ modo eſt iſoſceles/iſoſceli circū=lato/eandem deſcribenti pyramidem duplus.

13 Rotunde columne/et ſue pyramidis axis/et baſis equātur.

14 Rotunde columne: anguli vtriqꝫ ſunt recti.

Laterate

1 Omnis laterata columna: quinqꝫ ad minus habet ſuperficies/ſolidos angulos ſex/coſtas vero nouem.

2 Q ualis fuerit laterate colūne baſis: talem et ipſam lateratam columnam/eſſe oportet.



1

3 Cuiuſlibet laterate colūne: ſingule (preter baſes) ipſius ſuperficies/parallello grāme ſunt.

4 Laterata colūna et rotūda: ſibi inuicē cōuenicēter inſcribūtur/et circūſcribūtur

5 Lateratarum colūnarum ſpecies: planarum figurarum poligoniarū numero/multiplicantur.



6 Cuiuſlibet laterate colūne: oēs duo et duo anguli/qui ad oppoſitos eiuſdem ipſius coſte terminos collocantur: ſunt equales.

7 Ois laterata colūna: cuius baſis fuerit plana figura/equilatera et equiangula: eſt et equilatera et equiāgula.

Trigone

1 Trigona colūna: eſt omniū lateratarum colūnarum minima/atqꝫ prima.



Omni trigone colũne: quinq; tantũ inſunt ſuperficies/ſolidi anguli ſex/latera vero/atq; coſte nouem. 2

Si colũne trigone baſis fuerit iſopleurus trigonus: erunt tres ipſius ſupficies parallellogrãme/adinuicem equales. 3

Trigone colũne/omnes tres laterales anguli: duobus rectis angulis equãtur 4

Contingit lateralium trigone colũne angulorum: omnes tres eſſe acutos. aut vnũ quidẽ rectũ: duos vero acutos. aut duos iterũ acutos: et vnũ obtuſum. 5

Si trigone colũne/omnes laterales anguli fuerint equales: erunt acuti/et angulis iſopleuri equales. due quoq; eius baſes: equi iſopleuri. 6

Reliqui vero tres parallellogrãmi/eandem colũnam circũſtantes: identidem equales.

Si fuerit trigonus iſoſceles/trigone colũne baſis: erunt due eius parallellogrãme ſupficies/ſuper equa iſoſcelis latera cõſtitute equales: tertia vero vtriſq; aut maior/aut minor. 7

Tetragone



Tetragone colũne ſpecies: ſunt vt et tetragonorum. 1

Qualis fuerit colũne tetragone baſis: talem et ipſam fore conſtat colũnam. 2

Omni tetragone colũne: ſex inſunt ſupficies/omnes parallellogrãme: anguli vero ſolidi/octo: et coſte deniq; duodecim. 3

Omnis cubus: eſt tetragona colũna. 4

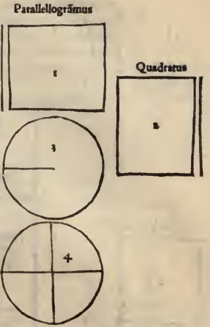
Omnis colũna tetragona/equilatera et equiangula: eſt cubus. 5

Si fuerit quadratus/tetragone colũne baſis: erunt omnes quattuor parallellogrãme ſuperficies/ſuper ipſam baſim collocate adinuicem equales/et equidiſtantes. 6

Si tetragone colũne baſis/fuerit parallellogramma ſupficies: erunt quattuor eius ſupficies baſi inſiſtentes due et due oppoſite equales/et equidiſtantes. 7
Et pari proportione: de ceteris pluriũ laterum/angulorumq; colũnis: ex cognitione ſuarum baſium determinãdum eſt. Super vnãquãq; enim poligoniarum figurarum: lateratam contingit ſtatuere colũnam.
Suntq; totuplices et pyramidum/et colũnarum lateratarũ ſpecies: quotiens planarum figurarum latera/et anguli multiplicantur.

Geometrici introductorij:
ſexti/et vltimi libri finis.
Editi anno domini
milleſimo quin-
gẽteſimo pri
mo: viceſi-
ma quin
ta no-
uem
bris

Caroli Bouilli Samarobrini liber de circuli quadratura.



1 ſ I linea recta: nullo ſuorum pũctorum fixo/tota equaliter in plano moueatur: neceſſario ſuo motu/parallellogrãmum deſcribet.

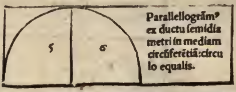
Ea verò ęqualiter mouetur: cum neqꝫ ad dexteram/neqꝫ ad ſiniſtram: à medio declinat.

2 Qꝫ ſi vt prius recta linea mota/ſecundũm ſuiipſius quãtitatẽ feratur: ducitur in ſeipſam/eritqꝫ deſcriptus eius quadratus.

3 Si recta linea altero ſuorũ extremorum fixo/moueatur: ea fixo circũducitur extremo. circulum/aut circuli portionem eodem motu deſcribens: cuius circũferentiam/ reliquũ extremũ ſua latione producit.

4 Qꝫ ſi recta linea hoc pacto circa alterum ſuorum extremorum delata/vnius recti anguli ſpacio circũducatur: quartam circuli partẽ/quadrantemuè deſcribet. Si vero duorum rectorum ſpacium conficiat: ſemicirculum. Si trium/tres circuli quadrãtes. Si deniqꝫ totum ſpaciũ (quod quattuor rectis eſt ęquale) perfectum circulum ſuo motu abſoluet.

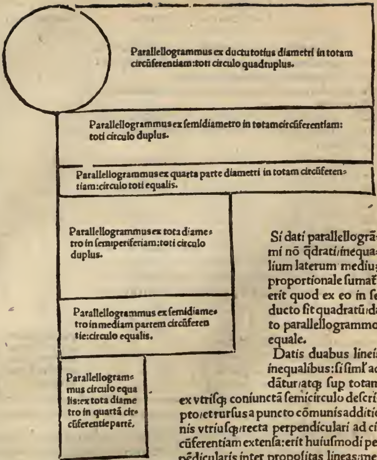
5 Recta linea alteri ſuorum extremorum fixo/quãtũlibet circũducta: quod ex ea/in rectã lineã arcui reuolutiõis ęqualẽ ducta producitur: ei/quod ex eius reuolutione fit/eſt duplum.



De recta linea arcui reuolutionis ęquali: et ipſo reuolutionis arcu/ſeu circũferẽtia/aut eius parte: ob ęqualitatem eadem eſt ratio.

6 Vndè manifeſtnm eſt/ quicquid fit ex circuli ſemidiametro: in medietatem circũferentię/ſiue in lineam rectam/medietati circũferentię ęqualem: eſſe parallellogrãmũ/qui dato circulo neceſſario eſt ęqualis. et cuius minus latus/ eſt ipſius circuli ſemidiameter: maius verò/eius circũferentię medietas.

7 Rurſus parallellogrãmus / ex ductu quartę partis diametri circuli dati/in totam circunferentiam: aut quartę partis circunferentię/in totam diametrum factus: eidem circulo eſt ęqualis. Qui verò fit ex ductu totius diametri/in circũferentię medietatem: aut totius circunferentię/in ſemidiametrũ/circulo eidem eſt duplus. Qui autẽ ex tota diametro/in totam circũferentiam: aut tota circũferẽtia/in totam diametrum: neceſſario eidem circulo quadruplus eſſe comprobatur.



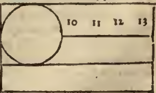




Si dati parallellogrā= mi nō q̄drati/inequa= lium laterum mediū proportionale ſumat: erit quod ex eo in ſe ducto fit quadratū da to parallellogrammo equale. 8

Datis duabus lineis inequalibus: ſi ſiml' ad dātur/atq; ſup totam ex vtriſq; coniunctā ſemicirculo deſcri= pto/et rurſus a puncto cōmunis additio nis vtriuſq;/recta perpendiculari ad cir cūferentiam extenſa: erit huiuſmodi per pēdicularis inter propoſitas lineas/me= dia proportionalis. 9

Motus circuli ſup planū.



Circulus ſuper lineam rectam/aut planam ſu perficiem conſiſtens: eandem in ſolo pūcto contingit. 10

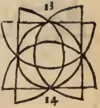
Circulus ſi ſuper planam ſuperficiem/equali ter in rectum moueatur: ſecundū rectam li= neam mouebitur: quā ſuo motu eius circū ferentia deſcribit/eidem circūferentie equalem. 11

Circulus ſuper rectam lineam equaliter latus: inter lineas equidiſtantes mo= 12

uetur.cuius cētrū/rectā lineā mediā deſcribit:vtriq; extremarū equidiſtātē.

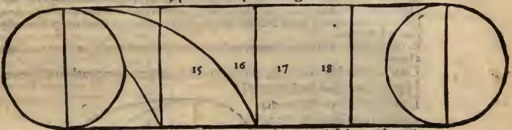
13 Circulo equaliter ſuper rectā lineā delato:quodlibet eius punctū(preter centrū)ad lineā motui ſubiectā/ſecundū circuli arcū(quadrāte minorē)deprimitur:aut ab ea ſurſū eleuatur. Solū vero centrū(quod nuſq̄ a medio diſcedit: nec eleuat/aut deprimitur)nullū ſuo motu deſcribit arcū/ſed lineā rectam.

14 Circuli equaliter ſuper rectam lineam delati:nullum punctū preter centrum/rectam ſuo motu lineam deſcribit.



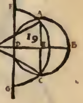
15 Si circulus ſuper rectam lineam conſiſtens:a puncto contactus/equaliter ſuper eam moueatur:quouſq; eandem iterum in eodem ſui pūcto contingat: erit recta linea/vtriſq; mutuorum cōtactuum pūctis intercepta:toti eius circūferētie equalis.in quā eodem motu/ducitur dati circuli diameter.

16 Quo fit vt ſi linea recta(quam perfecta reuolutione/tota dati circuli circūferētia abſoluit)in eius diametrum ducatur:naſcetur parallellogrāmus/dato circulo quadruplus.quē totū:idem circulus/ſuo motu pertrāſit.duobus eius ſemicirculis/hincinde ex vtraq; parte/extra parallellogrammū relictis.



17 Dimidia circuli ſuper rectam lineam reuolutio: ſpacium abſoluit/eidem circulo duplum.qui eſt parallellogrammus:ex ductu recte linee/dimidie eius circūferentie equalis:in ipſius diametrū productus.

18 Circuli ſecundùm quartam ſuę circūferentię partem/ſuper rectam lineam reuolutio: ſpacium pertrāſit/dato circulo equale.qui eſt parallellogrammus: ex ductu diametri in lineam rectam/quarte parti ſue circūferentie equalem: productus.

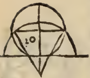


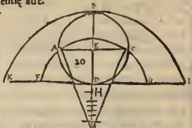
19 Punctū reuolutionis/quartę partis circūferentię circuli:ſuper rectam lineā/in eadem linea inuenire.

Sit circulus datus a b c d/cuius centrum e,ſuper rectam lineam f/g/conſiſtens:et eandem/in pūcto d,contingens. Ducatur in eo b/e/d/diameter: linee f,g/perpendicularis.quę extra circulum (d verſus)quātumlibet in rectū extendatur.Deinde ducatur et alia diameter a e c/priori diametro perpendicularis.hę duę diametri: datum circulum/in quattuor quadrantes ęquales diuidūt; pariter et totam eius circūferentiam:in quatuor arcus ęquales.

Diuidatur igitur ſemidiameter e d/in quattuor partes ęquales/qua(vt prius poſitum eſt)extra circulum in rectum producta: ſumatur ex ea/extra circulum vnius quartę menſura/quę ſit d h.ducanturq; lineę h a et h c/quas manifeſtū eſt eſſe ęquales.Et ſecundùm vtriuſq; quātitatem/facto h centro:deſcribatur circuli arcus linee f g/in duobus punctis f/et g occurrens.hęc igitur quęſita erunt puncta;quibus puncta a et c(moto vtrūlibet ſuper lineam f g/circulo)occurrent.Erit enim arcus c g:puncti c/ad lineā f g/declinatio;quē ſuo motu deſcribet/minimè ab eo diſcedens:priuſq̄ ad g/peruenerit.Similiter et altera ex parte/arcus a f:declinatio erit puncti a;à quo quidem pun-

ctum a:priuſq̃ ſit in f/minimè diſcedet. Et linea recta d g/arcui d c/recta verò d f/curue d a neceſ ſario erit ęqualis. Et recta tota f d g/medię circũferentię a d c.





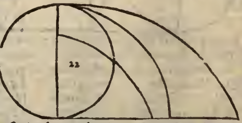
Eodem modo punctũ reuolutionis medię circũferentię: ſuper rectam lineam/ in eadem linea aſſignare. 20

¶Ex preced. nti/facile eſt preſentis propoſitum oſtendere. ſumantur eni in linea f g/g l/et f. K duabus lineis(g/i quidẽ/d g: f/k vero/d f equales, que et inter ſe erũt equales. Sunt enim d g/et d f equales quia curuis d c/et d a equalibus/equantur. erit igitur linea d g/i medie circũferentie d c/b/equalis. quã totã/circũferentia media abſoluet. et puncto i(euoluto/media ex parte circulo)occurret punctũ b. Similiter et linea d f K:toti arcui d/a/b. quam idem quoq; arcus/abſoluet. et pũctum K i(euoluto f verſus circulo)e puncto applicabit.

¶Poſſunt et aliter vtraq; puncta reuolutionis medię circũferentię: in vtramq; partem aſſignari. Retenta enim priori ſuppoſitione: de diametro b e d/quãtumlibet extra circulũ producta/ſumantur extra circulum ſex partes. quarum quelibet/quartę ſue ſemidiametri ſit ęqualis. ſitq; ſextę/et vltimę partis terminus l. Et facto l, centro: ſecundum longitudinem lineę l b/producatur circulus, aut circuli arcus aduſq; lineam rectam f g/in duobus punctis i, et K, diuidat. Eruntq; i et K propoſita puncta adinuenta. Et arcus b i/declinationis puncti b: à quo non diſcedet b/priuſq̃ puncto i, iungatur. Arcus verò b K/erit declinationis ipſius b, in partem f/cui tamdiu inerit b/quouſq; puncto K, fiat idem.

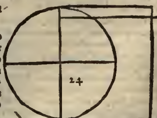
Ex his promptum eſt trium partium/et totius circũferentie reuolutionis puncta: in recta linea aſſignare.

Datę circũferẽtię/aut medię eius parti/aut quartę: rectam ęqualem aſſignare: Hęc ex prioribus facile nota eſt. 21



Dati circuli diameter: media eiuſdem circũferentia minor eſt: et quarta eius pte maior. 22

Vnde quod fit ex tota circuli diametro: in quartã circũferentię partem/aut mediã: aut totam circũferentiam: eſt parallellogrammus non quadratus/quorum primis eſt circulo ęqualis. Secundus/eidem duplus. tertius vero/quadruplus. 23

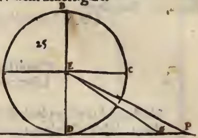


Ex his dato quocũq; circulo: facile eſt ęqualem eidem aſſignare quadratum. 24

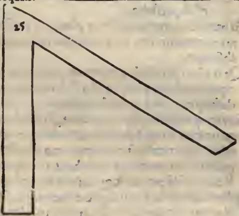
¶Sit enim, vt prius in. 19. circulus a b c d/et eadẽ hypotheſis, per quam lineam d g/rectam: curuę d c quartę circũferentię parti/conſtat eſſe ęqualem. Educatur à pũcto g/recta g/m: per lineam f g perpendicularis/et toti diametro b e d, ęqualis. ducaturq; linea b m/parallellogrã-mum perficiẽs: qui ſit/b d/g/m. Hic parallellogrammus dato circulo a b c d eſt ęqualis. quia fit ex eius diametro b d: in lineam d g/quartę circũferentię parti ęqualẽ. cuius maius latus/eſt diameter. b/d: minus verò recta d g/inter quę per nonam/ſumat latus proportionale: quod ſit d p. manifeſtum eſt, quod fit ex d p/in ſe/eſſe quadratum: parallellogrãmo b d g m ęqualem. Quare et circulo a b c d.

Fiat autem ſuper punctum p:linea p q. linee d.p.perpendicularis/et equalis. et ducatur linea o q.
quadratum d.o.p.q.perficiens.primũ parallelogrammo b.d.g.m.tũ et circulo dato a b c d/equa
lem.quod eſt propoſitum.

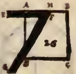
25 Angulum omnibus quadrandis circulis/vtilem inueſtigare.



¶ Seruata.14.hypotheſi: ducatur a centro e cir
culi a b c d/ad punctum g/recta linea e g.et erit
factus angulus d e g. qui in ligno aut ere/aut alia
quauis materia formatus: rectam lineam/quarte
parti circũferẽtie dati circuli equalẽ:ex linea ipſũ
circulum contingente/abſcindere docebit. Appli
catus enim vna ex parte circuli centro/et eius ſe
midiametro:ſi ex parte altera/ſecundum eius ex
tremitatẽ recta linea ducatur:quouſq; linee recte
circulum contingenti occurrat:ex ea rectam ab
ſcindet/quarte circũferẽtie pti dati circuli equalẽ.
Inſuper et ab eodem cẽtro/recta linea
ad punctum p ducta/que ſit e p.fiet al
ter angulus d e p/latera quadrati(dato
cuilibet circulo)equalis eliciẽdo aptus.
qui in ferro/aut calybe/aut ere/expreſ
ſus:ſi vt prius circuli dati centro/eiuſq;
ſemidiametro vna ex parte applicetur:
reliqua vero parte/ſecundum extremã
ipſius longitudinem/recta ducatur li
nea:adviſq; linee(datum circulum con
tingenti)occurrat.erit a puncto occur
ſus ad contactus punctum(vt ab ipſo p/
ad d)recta intercepta linea(vt p d)que
ſiti quadrati dato circulo equalis/latus
Et hi duo anguli:in eadem numero ſẽ
ſibili materia fieri poſſũt.ſi minor angu
lus(rectã q̃rte parti circũferẽtie equalẽ
indicans)foramine aliquo in eiuſdẽ ma
terie profunditate facto/exprimatur.

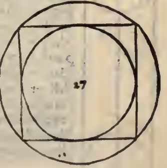


26 Dato cuicũq; quadrato:circulum aſſignare equalem.



¶ Applica inuẽtum per precedentẽ angulum:vni cuiuis coſtarum propoſiti quadrati.hoc pacto
vt altera eius extremitas/ab ipſius coſte rectitudine minime diſcrepet. Deinde ſecundũ coſte recti
tudinẽ:intantũ eundẽ angulũ dirige: quo relique eius extremitatis rectitudo in finẽ cõterminalis
coſte/quãtũlibet extenſa equaliter dirigat. Hinc ad ipſius anguli verticẽ:in ea(cui ſuppoſitus eſt)
coſta/punctũ ſignato. Erit eni eius coſte pars:a principio/ad id punctũ intercepta(cui ſcʒ ſuppoſi
tus adiacet ãgulus)petiti circuli(dato q̃drato equalis)ſemidiameter. Ve
luti ſit datus quadratus a b c d/cui equalis circulus petit aſſignari. Sit ve
ro et e f g/angulus ſecundũ 25 inuentus ligneus/aut ereus/aut cuiuſcũq;
ſolide materie.cuius vna extremitatũ e f/et reliqua f g:eius vero vertex f.
Applico eius extremitatẽ e f/coſte a b/ex parte a.quã intãtũ ſuper eã trãſ
fero:quoaduſq; extremitatis f g/rectitudo/quãtũlibet in rectũ porrecta
tranſeat per punctũ d. Hoc autẽ contingat vertice f anguli e f/puncto h/
in linea a b ſignato adiacente. Erit igitur linea a h/totius coſte a b pars:
queſiti circuli ſemidiameter.

27 Datum circulum:in duos circulos equales diuidere



¶ Aſſigna dato circulo/quadratum equalem.quem in duos equales pa
rallellogrãmos diuide.et eorum alterum reſolue in quadratum qui erit
dati circuli/et ſui quadrati medietas.Huic igitur quadrato/per precedẽtẽ
equalem circulum inuentũ:dato circulo inſcribe.et erit datus circulus/in

duos circulos equales partitus. Idem autem aliter ſine circuli quadratura/fieri poteſt. Inſcribatur enim dato circulo/quadratus:eidē vero quadrato/rurſus inſcribatur circulus.qui prioris circuli dati/erit circūſcripti medietas. Nam perinde atq; quadratus circulo inſcriptus eidem circulo quadrati/medietas eſt:ita et econtrario circulus omnis/quadrato inſcriptus:circūſcripti eidem quadrato circuli/eſt dimidium.

Libelli de circuli quadratura/finis.

Caroli Bouilli Samarobrini
Liber cubicationis ſphere.

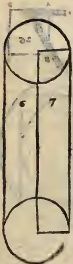
Vod circulus eſt in planis:hoc i ſolidis eſt ſphera.et quod in illis qua 1
dratus:in his/eſt cubus.et quod ad planam figuram/linea:ad ſolidam
eſt ſuperficies.

Si parallellogrammus/ſuper planum equaliter(nullo ſuorum extremorum fi 2
xo)moueatur: ſuo motu corpus rectangulum/et equidiſtantium laterum
abſoluet.

Qꝫ ſi idem parallellogrammus/quadratus fuerit:qui ſue coſte longitudine/ 3
equaliter ſuper planū(nullo fixo eius extremo)ducatur:erit totum corpus
deſcriptum/eius quadrati cubus.

Si vero parallellogrammus/circa aliquā ſuarū linearum immobiliter fixā du 4
catur:eius motu columna/aut columne portio fiet.cuius axis:erit latus pa-
rallellogrammi fixū.extremas vero eius baſes:latera parallellogrammi op-
poſita/axi contermina deſcribent:et extremam eius orbicularem ſuperficiē:
latus eiuſdē parallellogrāmi circūductū/axi oppoſitum.

plana ſuperficie alicui ſuorū extremorum fixo/quātūlibet circūducta: quod 5
eius reuolutione/deſcribitur corpus:eius quod eadem ſuperficie/in ſuperfi
ciem planam orbiculari ſuperficiei(prioris reuolutionis)equalē ducta deſcri
bitur/eſt medietas.

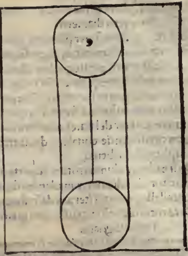


Quo fit vt cuiuſuis parallellogrammi/columna rotunda: ei quod ex eodem 6
parallellogrāmo:in columne ſemiperiferiam:aut ex duplo parallellogrāmo
in ſemiperiferie medietatem ducto/naſcit̄ eſt equalis. Quod vero ex priori
parallellogrāmo/in periferiā eiuſdem columne totam:aut ex duplo parallel
logrāmo/in eius ſemiperiferiam fit:eidem columne eſt duplum Quod autē
ex duplo parallellogrāmo in totā periferiā naſcitur ducto:toti colūne qua-
druplum comprobatur.

parallellogrammus qui alicui ſuorum extremorum fixo circūductus/rotū- 7
dam colūnam deſcribit:eſt eius columne ſemidiameter.duplus vero paral-
lellogrammus/tota diameter.cuius circūferentia(q̄ et periferia dicitur)eſt to
ta orbicularis ſuperficies:eandem columnam/cū baſibus vtriſq; circūdans.
circūferētie vero medietas(que et ſemiperiferia)eſt/eius ſuperficiei dimidiū.

Si rotūde colūne circūferentia plano inſiſtat:erit mutuus contactus/vtriuſq; 8
linea recta:axi ipſius columne equalis.

9 Si ſuper planũ/equaliter rotunda mo
ueatur columna: neceſſe eſt inter ſu=
perficies equidiſtãtes eam moueri.
cuius axis/aliam planam ſuperficiem
mediam ſuo motu deſcribet: vtriq;
extremarum ſuperficierum equidi=
ſtantem et equalem.

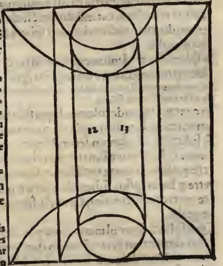


10 Mota hoc pacto ſuper planum/equa=
liter rotunda columna: ſingule eius
linee/axi equidiſtãtes (preter axem)
ad ſubiectum motui planum decli=
nant/aut ſurſum ab eo eleuant. ſuaq;
depreſſione/aut eleuatione: orbicula
res ſuperficies deſcribũt/quarta par
te circũferentie columne neceſſario
minores. Solus vero axis: nuſq̃ a me
dio aut deprimitur/aut eleuatur. ſed
equaliter in rectum fertur: ſuperficiẽ
non orbicularem/ſed planam ſuo motu deſcribens.

11 Si rotũda columna quarta dũtaxat ſue circũferentie parte/ſuper planũ equa=
liter torqueatur: ſuperficiem planam ſuo motu abſoluet/eidem quarte ſue
circũferentie parti equalem. media vero parte in girũ ducta: erit abſoluta pla
na ſuperficies/medie eius circũferentie equalis. Q; ſi perfecta fuerit colum
ne ſuper planum reuolutio: erit tota plana ſuperficies/ea reuolutione abſo=
luta: toti circũferẽtie colũne eq̃lis.

12 Rectam lineam: reuolutionis quar=
te partis circũferentie columne/itẽ
et medie/et cõſequenter totius cir
cũferentie in plano inuenire.

¶ Inueniantur per. 19 et 20. quadrature pro
poſitiones: pũcta reuolutionis baſiũ date co=
lumne ſc; quarte partis circũferentie/et me=
die/et totius. Sunt enim columne rotũde ba=
ſes/duo circuli. His vero punctis inuentis: du
cantur ab eiſdem/recte linee: axi date colũne
in plano equidiſtãtes. He enim linee ſunt que
proponuntur.



13 planam ſuperficiẽ/quarte parti cir=
cũferentie rotunde columne: dein
de et medie/et deniq; circũferẽtie
toti/equalem aſſignare.

¶ Inuenta linea reuolutionis quarte partis
circũferentie columne rotũde: erit ſuperficies
plana ab ea/ad lineam prioris cõtactus: quar
te parti circũferentie columne equalis. Et eo

pacto cetere ſuperficies/facile perquirantur.

Cuiuſlibet ſphere et ſue columne:maximi circuli/ſunt equales.Huius quidē 14
baſes/illius vero diametri.

Euoluta equaliter ſuper planum(quarta ſue circūferētie parte)columna rotū 15
da:tota eius diameter/in ſuperficiem planam reuolutioni ſubiectā(quarte
ſue circūferentie parti equalem)ducitur.corpus parallellogrāmū deſcribens
eidem columne equale.cuius longitudo/eſt ſuarum baſium diameter: lati=
tudo vero/quarta ſue circūferētie pars:Et craſſities totius ſue diametri/axis

Eadem vero columna/ſecundum partem ſue circūferentie mediam ſuper pla 16
num/equaliter delata:eius itidem diameter/in planam ſuperficiem(dimidie
eius circūferentie equalem)ducitur:parallellogrāmū corpus/toti columne
duplum deſcribens.

Qꝫ ſi eadem columna rotunda:perfecta reuolutione/ſuper planum ducatur: 17
ducitur eius diameter/in planam ſuperficiem/toti eius circūferentie equalē.
parallellogrammū iterum deſcribens corpus:eidem columne quadruplū.

Date rotunde colūne:cuius axis quarte ſue circūferentie parti equatur/equa 18
lem cubum aſſignare.

Sumatur inter baſium date columne diametrum et eius axem(per nonā quadrature)recta linea/ vtriqꝫ proportionalis. que in ſeipſam ducta:queſiti cubi/quadratum efficiet. Hic igitur quadratus in ſeipſum ducatur:et naſcetur inde queſitus cubus/date colūne equalis.

Sphera ſuper planam ſuperficiē conſiſtens:eādem in ſolo puncto contingit. 19

puncta reuolutionum circūferentie ſphere ſuper planum:ſiue quarte partis/ 20
ſiue medie/ſiue totius : vt et puncta/reuolutionū circuli:aut linee/reuolutio
num rotunde columne licet inueſtigare.

Si ſphere ſuper planum conſiſtentis/et eandem in puncto contingentis/pun= 21
cto reuolutionis quarte circūferentie partis inuento:ad ipſum/a puncto cō=
tactus recta linea extendatur:erit ſecundū eius quantitatē/circulus in eodē
plano ductus:medie orbiculari ſphere ſuperficiei(que eſt et eius ſemiperife
ria)equalis.

Si ſphera ſuper planum/equaliter in rectū moueatur:erit ſui motus ſpaciū/co 22
lumna rotunda.cuius baſis/ipſius ſphere diametro equalis.

Sphere diameter:eſt circulus/eidem concentricus:eam in duo equalia diuidens.cuius circūferen=tia:eſt in circūferentia ſphere.

In concaua rotunde columne ſuperficie poſita ſphera:eandē ſecūdum ſue dia 23
metri circūferentiam/vndiquaqꝫ contingit.

Si ſphera ſuper planum ſecundū rectam/vnius quadrantis reuolutione mo= 24
ueatur:ducitē eius diameter/in rectam lineam quarte circūferentie ſphere par
ti equalem.eo motu rotūdam colūnam deſcribēs:date ſphere equalē.cuius
vtreqꝫ baſes/ipſius ſphere diametro equātur.eius vero axis:linee recte(quar
te parti circunferentie ipſarum baſium/et totius diametri ſphere equali)eſt
equalis.

Qꝫ ſi ſphera ſuper planum/recto tramite media reuolutione pergat:cōtingit 25
eius diametrum in rectā lineam duci/medietati circūferentie ſphere equalē.
quo quidem ductu:columnam rotūdā efficiet/eidem ſphere duplam.cuius

vtraq; baſes: erunt(vt prius)ipſius ſphere diametro/equales.eius vero axis/ recte linee(medie circũferentie baſium/et diametri ſphere equali)equalis.

26 Si autem ſphere ſuper planũ/perfecta fiat reuolutio:eius diameter in rectam ducitur/toti circũferentie ſphere equalem.eo quidem ductu rotundam columnam deſcribens/ſphere toti quadruplam.cuius baſes/iterum diametro ſphere equantur.eius vero axis eſt linea recta : recte linee(toti circũferentie baſium/et diametri ſphere equali)equalis.

27 Vnde cuilibet date ſphere:rotundam primo columnã/aſſignare equalem:eſt manifeſtum. Et deniq; ex columna/cubum.

Sumatur enim recta linea/reuolutionis quarte partis circũferẽtie propoſite ſphere:eidem quarte equalis.in quam/ſphere diameter ducta:rotundam colũnam conflabit/eidem ſphere equalem. Huic ergo colũne:per 18 huius inueniatur equalis cubus. qui et erit ꝓpoſite ſphere equalis:quod eſt propoſitum. Poteſt et hoc idem(ſine columne medio)immediatius demonſtrari/hoc pacto. Inter date ſphere axem et rectam quarte parti ſue circũferentie equã:ſumatur media proportionalis linea:que erit queſiti cubi latus.

28 Si ſemicirculus perfecto giro/ſue diametro circũducatur: ſpheram deſcribit. cuius axis/eſt ipſius ſemicirculi diameter. Et cuius rurſus diameter:eſt circulus/eidem ſemicirculo duplus.

29 Semicirculus/quomodolibet ſue diametro circunductus:in arcum ſuo arcui coincidentem ducitur.

Arcus coincidentes:ſunt quorum ſemidiametri ſunt equales.

30 Quod fit ex ductu ſemicirculi/in quẽcũq; arcum ſuo arcui coincidẽtem:eius quod ex eodem in rectã lineam/eidem arcui equalẽ ducto naſcitur corpus: eſt medietas.

31 Semicirculus quãtũcũq; in rectam lineam/perpendiculariter ducatur:colũne rotunde medietatem producit.

32 Circulus totus/in rectã lineã perpẽdiculariter ductus:rotũdã colũnã ꝓfert.

33 Hinc omnis rotũda colũna cuius baſes propoſite ſphere diametro equales: ſi et eius axis/quarte parti circũferentie diametri/eiuſdẽ ſphere fuerit equalis:eidem ſphere equatur.Si vero eius axis/axi priori duplus: erit et colũna/eidem ſphere dupla.Si triplus:tripla.Et ſi deniq; quadruplus:itidẽ quadrupla.Et omnino que proportio axis colũne/ad quartã circũferentie diametri ſphere partem:ea eſt et totius colũne ad totam ſpheram.

34 Que rurſus vniuſcuiuſq; colũne/ad eius ſpherã proportio:ea eſt et extreme ſupficiei colũne circũdantis/ad ſuperficiẽ ſphere circũdantẽ/ atq; cõuexam.

Sphera vniuſcuiuſq; colũne dicitur:cuius diameter/ipſius columne baſibus equatur.Et e diuerſo ſphere columna:cuius baſes/ſphere diametro equales.

35 Inde orbiculari ſphere ſuperficiei/extreme circũdanti/atq; conuexe:equalem planam(equidem et quadratum)liquet aſſignare.

¶ Nam ſumatur propoſite ſphere columna/eidem equalis. Erit igitur per precedentem/cõuexa eius ſuperficies:conuexe ſphere ſuperficiei equa.axis vero: quarte parti circũferentie eiuſdem.et baſis/toti diametro. Statuatur deinde columna ſuper planũ : et ſumãtur ex vtraq; parte:puncta reuolutionis medie circũferentie ipſius.inter que/recta linea ducatur:que neceſſario circũferentie vtriuſq;/columne ſcilicet et ſphere equabitur(equantur enim per decimãquartam/ſphere et ſue columne circũferentie)inter quã et ipſius columne axem linea proportionalis:erit queſiti circũdãti

ſphere ſuperficiei equalis) quadrati latus. Idem autē promptius hoc pacto fiet. Inueniantur due recte: vna toti circūferentie/alia vero eiuſdem quarte equalis. quarum media linea proportionalis/in ſeipſam ducta: queſitum quadratum indicabit. Erit autē linea/inter vtraq; proportionalis: recta/medie circūferentie eiuſdem ſphere equalis.

Vnde rurſus manifeſtū eſt: ex duabus rectis/vtriſq; quidē mediis date ſphere circūferentiis equalibus in ſeinuicem ductis: produci quadratum/toti extreme eiuſdē ſphere ſuperficiei equalem. ex duabus vero inequalibus (altera quidem toti circūferentie/altera vero quarte eius parti equalibus) parallellogrāmū produci/non quadratum: eidem circūdanti ſuperficiei equum. 36

Rurſus extreme circūdanti ſphere ſuperficiei: equū circulum licet aſſignare. 37

¶ Reperiatur enim per 34 quadratus/eidē ſuperficiei equalis. Huic vero quadrato (per 26 quadrature) circulus equalis aſſignetur: qui et date ſphere ſuperficiei/equus erit.

Datam ſpheram/in duas equales ſpheras diuidere. 38

Inſcribe date ſphere cubum/cui rurſus cubo ſpheram aliā inſcribe: que prioris ſphere cubo circūſcripte medietas erit. Eadem enim eſt ſphere et cubi adinuicem inſcriptorū aut circūſcriptorum: que et circuli et quadrati ratio. Vtq; duorum circulorū vnius quadrato circūſcripti/ alterius vero inſcripti/circūſcriptus ad inſcriptum eſt duplus: itemq; duorum quadratorum vnius circūſcripti circulo/alterius vero inſcripti/inſcriptus iterū circūſcripti medietas eſt. ita & ſi due quoq; ſphere ſint/hec cubo circūſcripta/illa vera eidem inſcripta: huic dupla illa erit, et ſi ex oppoſito duo cubi/ vnus ſpheram circūſcribēs/alter vero ab eadem circūſcriptus: erit hic illius medietas. Et omnino que erat quadrature circuli difficultas: par erat et cubicationis ſphere. vt qui non quadratum et circulum equare poterāt: neq; etiam ſpheram et cubum equare/equaliave hactenus demōſtrare potuerint. Nunc vero quadrato circulo/et ſphera cubicata eſt: et reſoluto in circulum quadrato dato/proportionabiliter aſſignatus cubus in ſpheram eidem equalem conuertitur.

Iibelli de ſphe
rę cubica-
tione fi
nis.

Caroli Bouilli Samarobrini introductio in ſcientiam perſpectiuam.

Viſus	Extremus
Viſibile	Medius
Videndi medium	❡Extremus
Viſibilis ſpecies	Albedo
Viſualis radius	Nigredo
Speculum	❡Medius
❡Viſus	puniceus
Simplex	Flauus
Compoſitus	Viridis
Rectus	purpureus
Obliquus	❡Magnitudo
Integer	punctus
Fractus	Linea
❡Viſibile	Superficies
Lux	Corpus
Vmbra	❡Speculum
Color	Concauum
Magnitudo	Conuexum
❡Color	planum

Diffinitiones cõmunium

Viſus eſt perſpectiua poteſtas:viſibilia obiecta deprehendens Et nõnunq̃ videndi virtus:nonnunq̃ verò viſio:aut viſibilis obiecti ad viſũ diffuſio:ſpecieſq; dicitur.

Viſibile eſt viſus obiectum quodcũq; per ſe a viſu deprehenditur. Quę enĩ per accidens:vt alterius ſimilitudine:aut priuatione videntur:preſenti propoſito minus congruunt. Corporeę enim ſubſtantię:ſuorum colorum:aut magnitudinum ſpecie viſibiles fiunt:tenebrę verò lucis defectu.





Videndi medium eſt diuiſibile ſpacium:per quod viſibilis obiecti ſpecies:ab eo ad viſum defertur.

Viſibilis verò ſpecies:eſt eius,quod videtur,ſimilitudo:idipm viſui rep̄ſentãs.

Viſualis radius eſt linea recta:quę a centro viſus digrediens:ad viſibilis rei cẽtrum terminatur. Et hic eſt radius primus:cęteri enim infiniti ſunt.

Speculum eſt corpus:quod reflexã viſibilis rei ſpeciem:palã ipſi viſui refert.

Viſuum

Viſus ſimplex:eſt rei:ſimplici eius ſimilitudine intuitio.

Viſus verò cõpoſitus:qui duplici:reflexaq; ſpecie rem viſibilem deprehẽdit.

Viſus rectus:eſt,cuius viſiuus radius viſibili rei eſt perpendicularis.

Obliquus verò viſus:eſt,cuius radius viſibili rei nõ perpendiculariter incidit.

Viſus integer eſt,qui ſimplici:regulari:ac per totũ eiuſdem naturę medio fit.

Fractus verò dicitur viſus: cuius radius diſſimilis rarioris/ denſioriſq; medij occurſu frangitur.

Viſibilium

Lux eſt omnium viſibilium primum: que per ſe ceterorum viſibilium ſpecies/ viſui profert. Eius oppoſitũ/eſt ſimplex eius priuatio(que tenebre dicũtur) viſibilium rerum ſpecies/a viſu intercludẽs. Vmbra vero eſt lucis a corpore opaco interceptio.

Color eſt proprium viſus obiectum/nullo alio ſenſu perceptibile.

Magnitudo vero eſt viſus obiectum cõmune: quã preter viſum/tactus quoq; ſentit.

Colorum

Color extremus: eſt color ſimplex/excellens,et primus.

Medius vero,qui ex coloris extremi diſtantia/defectuq; naſcitur.

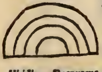
Et colorum quidam veri ſunt: in ſenſibilibus corporibus verè exiſtentes/ac p̃manentes. Alij verò ficti/qui cũ ſenſibilibus corporibus minimè inhereant: nobis tamen ob ipſorum viſibilium diſtantiam/aut noſtri viſus debilitatẽ/ aut radiorum refractionem/aut reflexionem demonſtrãtur. Hęc enim omia, aut veros rerum colores immutant: aut non exiſtentes apparere faciunt.

Extremorum

Albedo eſt color/viſiuũ radium diſpergens. Nigredo verò/quę radium eũdem congregat.

Mediorum

Puniceus



Viridis. - Purpureus

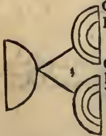
puniceus,qui et flauus/color eſt qualis malis punicis innaſcitur. Viridis autẽ qui vt plurimum ex humidorum corporum vita,aut putredine naſcitur. At purpureus eſt ſanguinis color nigro immediatus. Et hi quidem ſunt cõmunes yridis colores: quibus diſcolor yris perſpicitur. primus puniceus/viridis medius/tertius purpureus.

Magnitudinum

Quid punctus/linea/ſuperficies/et corpus: geometricũ introductoriũ pãdit. Sunt autem puncta/lineę/et ſuperficies ſecũdum ſe quidem viſibilia. Corpus verò minimè ſecundum ſe viſibile: vt quod vndiq; circũſtantibus clauditur ſuperficiebus/intrinſecus occultum/abditumq; manens. Cum enim corpus nos videre dicimus: eius aut ſola puncta/aut lineas/aut ſuperficies/ non intimam ipſius profunditatem intuemur.

Speculorum

Speculum concauum eſt concauę ſphęrę portio: cuius ſuperficies cõcaua ad viſum conuertitur.



Conuexum verò,cuius conuexa ſuperficies/viſum reſpicit.

planum autem ſpeculum eſt: cui ad viſum conuerſa ſuperficies eſt plana.

Diffinitorum proprietates

Viſuum

Omnis viſus a viſibili/eius ſpeciem ſuſcipiendo patitur.

Neceſſe eſt viſum viſibili attiguum/immediatumq; non eſſe.

Vtriq; oculi videndo in idem viſibile concurrunt: idq; vt vnus oculus ſimul intuentur.

4 Viſus tribus ſpherulis diſtinguitur: extrema quidem circũdante/ quã albugineam dicunt. media verò cerulea/ quã corneam: intima autem nigricante/ quam vueam/ glacialemq; appellant.

5 Harum omnium ſphærularum centra/ vnica recta linea continet.

6 Totus viſus in ſpherulę vueę centro conſiſtit.

7 Linea omnium ſphærularum centra continens: eſt earum axis/ vnicuiq; earum perpendicularis.

8 Duobus oculis vt vno tantum oculo ſumptis: quicũq; radius vni eorum eſt perpendicularis/ eſt et alteri perpendicularis imaginandus.

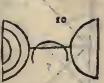
9 Omnis viſus: ſecundum rectam lineam fit.

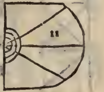
10 Si iter viſũ et viſibile vlla ẽ curuitas/ aut tumor: viſionẽ aut impedit/ aut frãgit.

11 Vniuerſus oculi intuitus: orbem nõ perfectum/ ſed tantũ dimidium opplet.

12 Quanta eſt oculi diffuſio qua exterius patet: tantus eſt et eius intuitus.

13 Hinc fit vt quattuor ſolidorum angulorũ ſpacio/ ac toto hemiſpherio: viſus viſibilia deprehendat.

10 

11 

Viſibilis

1 Omne viſibile/ in viſum propriam ſpeciem agit.

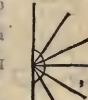
2 Viſibilis rei ſubſtantia immota manet: cuius ſola ſpecies in oculum pergit.

3 Viſibile toto hemiſpherio: ſuam ſimilitudinem in eandem partem fundit.

4 Hinc viſibilis/ et viſus diffuſiones ęquantur.

5 Sine lumine/ viſibilia nuſq̃ cernuntur.

6 Neceſſe eſt viſibile viſui in eius diffuſione/ expanſione/ atq; hemiſpherio/ eſſe obiectum.

3 

Medij videndi.

1 Medio videndi/ viſus et viſibile ſeparantur.

2 Primum medium a viſibili patitur: poſtremo in viſum agens.

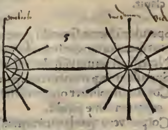
3 Videndi medium: vtriq; viſui et viſibili immediatum eſt.

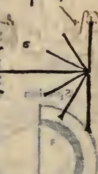
4 Omne videndi medium/ eſt corpus tranſparens.

5 Conuenit videndi medium actu lumine eſſe affectum.

6 Medij vidẽdi duo ſunt hemiſpheria: vnum quidẽ quò ad viſum/ alterum verò quò ad viſibile cõuertitur.

7 Hinc ſolùm vidẽdi medium perfectum eſt: vt quod totius ſpherę ambitu circũquaq; radios expandit.

5 

6 

Viſualis radij

1 Secundùm totũ viſus hemiſpheriũ: viſualis ſeſe radius emittit.

2 In ipſa viſiuorum radiorũ effuſione: oculus ſui centri iudicio/ vt indiuiſibilis eſt ſumendus.

3 Solius glacialis ſpherę centrum: viſiuos radios toto hemiſpherio fundit.

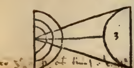
4 Omnes viſiui radij: ſunt ſpherę oculi glaciali perpendiculares.

5 Fortiſſimus viſiuus radius eſt, qui totius viſus axi cõtinuus/ directuſq; exiſtit

6 Fortiſſimus viſiuus radius anterior: ceteri verò, qui ad dexterã dextri/ qui ad ſiniſtram: ſiniſtri dicuntur.

Viſualis radius: in vnum tantum viſibile perfecte intendit. 7

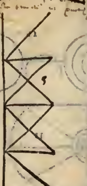
Viſibilis ſpeciei



Viſibilis ſpecies ab ipſo viſibili effuſa: totum hemiſpherium complet. 1

Viſibilium ſpecies: minime ſecũdum totum hemiſpherium/ aut lineas equidiſtantes in oculum perueniunt. 2

Rerum viſibilium ſpecies: aut ſecundum lineam rectam/ aut trigonũ/ aut pyramidem a viſibilibus ad oculum pergũt. Huiuſce vero pyramidis baſis: in re viſibili/ conus autem in oculo exiſtit. 3



A diuerſis viſibilis rei pũctis: diuerſi viſiui radij omnes in eũdem oculum cõcurrentes producuntur. 4

Quodlibet viſibilis rei punctum: radios potentia infinitos/ in varios oculos hemiſpherio toto rem viſibilem circũſtantes expandit. 5

Cuiuſlibet viſibilis ſpeciei radius vnuſquiſq; in vnum tantum oculum cadit. 6

Eiuſdem viſibilis ſpecies/ tum demum et earũdem ſpecierum radij in immenſum multiplicantur. 7

Diuerſorum rei viſibilis pũctorum in eũdem oculum tendentiũ radij: quãto longius pergunt/ tanto quoq; minus abinuicem diſtant. 8

Eiuſdem vero puncti radij in diuerſos oculos expãſi: quo magis a viſibili/ eo quoq; magis et inter ſe elongantur. 9



Qualis eſt extrinſeca rei diſpoſitio: tale eſt et in oculo (cũctis paribus) ſue ſpeciei iudicium. 10

Fit viſus: cum extrinſece rei diſpoſitioni (diſſimilia tolle) par eſt in oculo ſue ſpeciei ordo/ atq; repreſentatio. 11

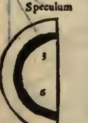
Impoſſibile eſt plures viſibilis ſpeciei radios/ eidem oculo eſſe perpendiculares. pluribus vero oculis/ plures ſpherici viſibilis radios perpẽdiculares eſſe contingit. Aliorum autem viſibilium/ minime. 12

Viſibilis ſpecies ſue veritatis ſubſtantiam: et omnia eius accidentia oculo declarat. 13

Speculi

Speculorũ forme/ ſecundũ geometricarum figurarũ ſpecies variantur: ſuntq; tot ſpeculorum conficiendorum modi/ quot et geometrice figure. 1

Neceſſe eſt rerum viſibilium ſpecies: viſibiliter a ſpeculo in oculum reflecti. 2



Speculum neq; omnino tranſparens eſt/ neq; omnino opacum. 3

Corpus ſimpliciter opacum/ viſibiliũ rerum ſpecies aut non ſuſcipit: aut ſuſceptas minime pandit. 4

Corpus vero quod omnino tranſparet: eaſdem ſpecies/ minime reflectit. 5

Hinc ſpeculi ſuprema ſuperficies perſpicua/ poſtrema vero opaca ſit oportet: atq; ex diſſimilibus ſuperficiebus/ eſt ſpeculum mixtum. 6

Suprema ſpeculi ſuperficies/ viſibilium rerum ſuſcipit ſpecies: extrema vero eaſdem reflectens/ in oculum refert. 7

Speculi ſupficies prima a viſibilibus ſpeciebus patitur: extrema vero primũ 8

quidem ipſis reſiſtit:ac demum earum reflexione agit.

9 Contingit trāſparētia corpora opacis corporibus cōiuncta:atq; attigua:fieri ſpecula.ea autem per ſe ſumpta:ſpecula non ſunt.

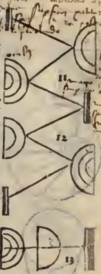
10 Neceſſe eſt ſpeculū inter rem viſibilem:et oculum quomodolibet collocari: atq; vtriuſq; eſſe medium.

11 Si viſus et ſpeculū a re viſibili:aut res quidem viſibilis et ſpeculū a viſu ex oppoſito diſtēt:erit eorum ſitus ad reflexe imaginis perceptionē incōmodus.

12 Queuis autē alia eorum diſpoſitio:reflexe imaginis intuitioni cōgruit:veluti cū fuerint viſus et viſibile cōiūcta:ac eadē in pte ſita:ipſiq; ſpeculo oppoſita.

13 Ab omni ſpeculo:perpendicularis reflexionis inuiſibilis eſt imago.

14 Res viſibilis in tanta ſpeculi profunditate apparet: quanta eſt eius a ſpeculo diſtantia.



Viſus ſimplicis

1 Simplex viſus:rei vniuſcuiuſq; veritatē prima eius ſimilitudine deprehendit.

2 Simplicis viſus:viſibilis ſpecies eſt ſimplex:et ſue veritatis prima:a qua recto tramite ad oculum pergit.

3 Simplici intuitioni:ſpeculo opus eſt nullo.

4 Quicquid in parte oculi collocatur:ſimplici viſu inuiſibile manet.

5 Vnde fit vt ſimplicis intuitionis obiectum:ex neceſſitate viſui ſecundū ſitum debeat opponi.

6 Simplex viſus compoſito fortior:ac prior approbatur.

Compoſiti

1 Compoſito viſu:vniuſcuiuſq; rei veritatē ſecūda eius ſimilitudine intuemur.

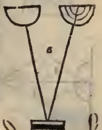
2 Compoſitus viſus eſt reflexus.

3 Compoſito viſui:ſpeculum eſt neceſſarium.

4 Compoſiti viſus obiectum eſt prima veritatis ſimilitudo: que ſecunde ſimilitudinis medio:in ſpeculo apparet.

5 Compoſitus viſus duplici radio fit:altero quidem directo:a re viſibili ad ſpeculum.altero vero reflexo:a ſpeculo ad viſum.

6 Angulus incidentie directi radij ſuper ſpeculum: reflexi radij angulo eſt equalis.



7 Viſus compoſitus:ſimplici debilior:poſteriorq; eſt.

8 Compoſite intuitionis obiectum:in oculi parte collocari debet.

9 Sola compoſita intuitione res ſeipſam:ſuamq; ſimilitudinem intuetur.

10 Omnis angulus ſpeculo perpendiculariter incidens:in ſeipſum reflectitur.

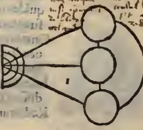
Recti

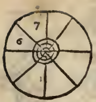
1 Rectus viſus:obliquo fortior eſt:et quedam eius equalitas.

2 Impoſſibile eſt plura viſibilia: aut plures eiuſdem viſibilis partes recto viſu ab eodem oculo deprehendi.

3 Hinc quicquid omnino ſimplici viſu deprehenditur: indiuiſibile eſſe oportet et punctum

4 Res tamen diuiſibilis ſimplici viſu videri dicitur:quia eius aliquis radius oculum perpendiculariter incidit,





Contingit rei viſibilis radium(quo ab oculo videtur)eidem ſecundū longitudinem et latitudinem perpendicularē eſſe. Aut longitudine perpendicularē/latitudine vero obliquū. Aut longitudine obliquū/et latitudine perpendicularem. Aut deniq; et longitudine et latitudine obliquum. 5

Oculus in centro poſitus:omnia circūferentię puncta recto viſu perpendit. 6

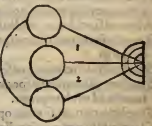
Cuiuſlibet puncti circūferentię:rectę intuitionis radius in vlteriora ꝓtenſus/per eius centrum tranſit. 7

Obliqui

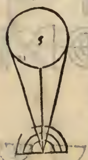


Obliquus viſus:recto minus fortis ē/et ineq̄lis. 1

Si idem oculus plura ſimul viſibilia/aut plures eiuſdem viſibilis partes intueatur: erunt aut omnes intuitus/aut pręter tantùm vnū cęteri obliqui. 2



Si plurium eiuſdē viſibilis radiorū/fuerit vnuſquiſpiā oculo perpendicularis:non obliquus/ſed rectus cenſetur viſus. Si verò radij omnes oculo obliqui:viſus cenſendus eſt obliquus. 3



Si fuerit oculus extra circūferentię centrū/ſed in eius ambitu conſiſtens:duo tantū eius puncta diametro diſtantia recto intuitu perſpiciet: ceterorū verò punctorum obliquus erit obtutus. 4

Oculus verò extra circūferentię et centrū/et ambitū conſiſtens:aut nullū/aut vnum tantùm eius punctum/recto deprehendit iudicio: cętera verò puncta obliquo. 5

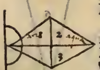
Integri

Simplex et eiuſdem naturę medium:radiorum viſualium/ſpecierumq; viſibilium integritatem ſaluat. 1

Integro viſu:res viſibilis tantùm vna/et integra videtur. 2

Integri viſus radius:a viſibili ad oculū directus: continuus/vnuſq; peruenit. 3

Fracti



Diſſimile medium occurrens:obliquos viſuales radios frangit. 1

Fractus radius:in eo quo frangitur puncto/angulum facit. 2

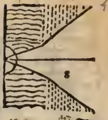
Rei viſibilis radius/interuenienti diſſimili medio perpendiculariter incidens: ab eo non frangitur. 3

Solus is radius a diſſimili medio frangitur:qui eidem ad impares angulos incidit. Eſt autem diſſimile medium vt rarius/aut denſius. Rarius eni magis quidem diaphanum/minus reſiſtit. denſius vero minus diaphanum: magis ſuapte natura reſiſtens. 4

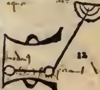
Omnium radiorum/perpēdicularis eſt fortiſſimus. ceteri vero quanto perpendiculari propiores:tanto fortiores. quanto vero magis a perpendiculari remoti/tanto debiliores exiſtunt. 5

Interdum radij qui magis a perpendiculari diſtant:per ſe ſola debilitate/ſine diſſimilis medij occurſu franguntur. 6

Radiorum fractio:aut a perpendiculari/aut ad perpendicularem fit. 7



8 Rarius medium vt aer:radios a perpēdiculari frangit. Denſius vero vt aqua ad perpendicularem.
9 Radij qui ad perpendicularem franguntur longius porrecti:tandem perpendiculari cōcurrunt/ipſumqꝫ adaugent.
10 plerūqꝫ quod directo radio videri non poteſt:eodem fracto percipitur.
11 Directo/infractoqꝫ radio:res vbi eſt apparet. fracto vero/extra ſuum locum videtur.

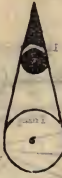


12 Fracto radio/res in eo apparet loco:in quo pyramis viſus/cum perpendiculari radio a re viſibili ad diaphani corporis eam cōtinentis ſuperficiem ducto/ concurrit.
13 Quicquid viſibilium rerum reflectit radios/eoſdem frangit: At nō quicquid eos frangit/reflectit.
14 Omnis radius reflexus/eſt et fractus: At non omnis fractus/reflectitur.
15 Tranſparens corpus radios ſolum frangere/at non reflectere ſufficit.
16 Fracto radio res apparet interrupta.



Lucis.

1 Lux eſt lucidorum corporum ſpecies.
2 Sine luce/aut viſibilium rerum non diffunduntur ſpecies:aut in medio quidem diffuſe/minime ad oculū perueniūt:aut in oculo receptas/vis intuitiua non ſentit.
3 Vnde fit vt lux ſit diffuſionis viſibilium ſpecierum/aut earum directionis in oculum/aut intuitiui iudicij actus.
4 Lux rurſus eſt et perſpicuorum/et colorum/et viſibilium omnium actus.
5 Sub luce fulgor/lucis ſimilitudo cōprehenditur.
6 Fulgida corpora:proprio fulgore:in tenebris conſpiciuntur.
7 Quodlibet lucidorum corporum punctū:toto hemiſperio/lucem in rectum diffundit.



Vmbre.

1 Omnes tenebre/vmbre ſunt:vmbre vero non omnes/tenebre.
2 Vmbra eſt quedam opaci corporis ſpecies.
3 Neceſſe eſt inter vmbram/et luminoſum corpus:diametraliter corpus opacū opponi.



4 Corporis tranſparentis luminoſo corpori oppoſiti/nulla eſt vmbra.
5 Vt a corpore luminoſo lumen ſecundum pyramidē diffunditur:ita et ab opaco vmbra.
6 Si lucidum corpus fuerit oppoſito ſibi opaco maius:erit eius vmbra/pyramis directa atqꝫ perfecta. Si vero equale/columna: Si minus:pyramis euerſa et imperfecta.



7 Si fuerit opaci corporis vmbra pyramis:eius axis quantumlibet productus per corporis opaci et lucidi centrū tranſibit.
8 Vmbre corporis opaci pyramis:eandem multilateram cū corpore opaco ſortita eſt figuram.



Ex corporis vmbra:eius quantitatem deprehendere licet. 9

Angulo et axe pyramidis vmbre deprehenſis:corporis vmbroſi quantitas in promptu aſſignari poteſt. 10

Coloris.

Colores ſunt extrinſeca ſubſtantiarũ rerũ ſigna. 1

Color eſt luce poſterior/et vt eius potentia:qua ſine inuiſibilis manet. 2

Colores aut ex rerum natura/aut paſſionibus/aut luminis reflexione/aut aliorum colorum iuxta poſitione gignũtur. 3

Colores ex rerum natura aut paſſionibus orti/veri ſunt:quorũ illi in ſubiecto permanentes/hi vero vt plurimũ fluidi continuo diſpereunt. 4

Qui vero ex luminis reflexione aut aliorũ colorũ iuxta poſitione naſcuntur: non veri ſunt/ſed tantũmodo apparentes. 5

Veri colores/opacis dũtaxat corporibus inſũt. Apparẽtes autẽ et in opacis/ et tranſparentibus conſpiciuntur. 6

Magnitudinis.

Contingit magnitudinẽ propria ſpecie/vel nullo affectam colore videri. 1

Magnitudo aut ſecundũ lineam/aut ſuperficiẽ/aut corpus videtur. 2

Ex viſu magnitudinis/eius quantitas eſt cognoſcibilis. 3

Sub magnitudinibus/earum termini cõprehenduntur. 4

Soli magnitudinũ termini ſunt principalia viſus obiecta:magnitudines vero media/quibus ſui termini cõſpiciuntur. principale viſus obiectũ/eſt quod videtur. Mediũ vero/ſecundũ quod videtur. 5

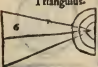
Linea viſus pũcti.



Omnes magnitudinũ termini/ſecundũ ſuas magnitudines videntur.pũctum quidẽ ſecundũ lineã/quẽ ſecundũ ſuperficiẽ/quẽ ſecundũ corpus. 6

Inter magnitudinũ terminos qui eſt ſolum terminus/et non magnitudo veluti punctus:viſibilis quidẽ eſt/at ſecundũ ipſũ nichil videri contingit. 7

Triangulus.

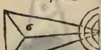


Lineę viſus.

Inter vero magnitudines/ea item que ſola eſt magnitudo/termini ratione deficiens veluti corpus:ſolũ ſecundũ ipſã quippiã videtur/ipſa vero inuiſibilis manet. 8

Hinc terminorum extremus vt punctus ſolum principale eſt quod videtur: nullius videndi medium.extrema vero magnitudo vt corpus:ſolum vidẽdi medium/non principale. Medij autem termini et magnitudines:vt termini quidẽ ad ſeipſos/precipua ſunt viſus obiecta.vt magnitudines vero ad ſuos terminos/media quibus videantur. 9

Pyramis.



Trianguli viſus.

Omnis magnitudo a longe conſpecta:planior apparet/atq; minor. 10

Colorum extremorũ et mediorum.

Colores extremi:ſunt medijs natura priores. 1

Extremi colores ſunt tantũ duo:medij vero infiniti eſſe poſſunt. 2

Extremi colores/medijs certiores ſunt et permanentiores. 3

Extremos colores/frequentius rei natura/aut paſſio profert:raro autem colorum iuxta poſitio/aut radiorum reflexio. 4

Medij vero colores:frequenter quacunq; ex cauſa gignũtur. 5

6 Hinc extremorũ colorũ difficilior eſt ortus/interitus/et cauſa. Mediorũ vero facilior.

Albedinis et nigredinis.

1 Albedo eſt vt nigredinis habitus: lux/actus et perfectio.

2 Nigredo vero vt eius priuatio: vmbra/potentia/et imperfectio.

3 Albedo eſt natura nigredine prior.

4 Contingit ex albo/in nigrum et mediũ colorẽ omnẽ permutari.

5 Ex nigro vero in album/aut medium colorẽ: aut impoſſibilis/aut difficilis eſt regreſſus.

6 Albedine diſperſus viſus debilitatur: nigredine vero collectus/fortior euadit

7 Omnis color de prope/qualis eſt apparet: ex diſtantia vero/tandem in nigredinem permutari videtur.

8 Hinc nigredo eſt oĩm colorũ finis: in quo vniuſcuiuſq; deficit viſus.

punicei/viridis/purpurei.

1 Fulgidum interſtite nigro conſpectum/puniceum gignit.

2 Quicunq; lucis radius ex reflexione puniceum gignit: debilior factus/viridẽ profert.

3 Rurſum radius/quo fortiore viridis color gignitur: deficiens continuo in purpureum permutatur.

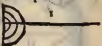
4 Ex punicei igitur defectu/viridis: ex cuius imminutione/purpureus oritur.

5 Tres precipui viridis colores ſũt: puniceus/viridis et purpureus: qui ex radiorum reflexione naſcuntur.

puncti.

1 punctũ ſecundũ rectã lineã videtur/eiuſq; radius eſt linea recta.

Linea pũcti viſus.



2 Quodlibet tranſparentis corporis punctũ: ex omni parte eſt viſibile.

3 Tranſparentis corporis quodlibet pũctum: ſecundũ ſpherã totam radios in mediũ profert.

4 Sola opaci corporis extrema puncta/que extremis eius ſuperficiebus inſunt/ viſibilia ſunt: intima autem/inuiſibilia.

5 Nulla opaci corporis puncta hemiſpherio toto ſunt conſpicua.

6 Omnis puncti intuitus: eſt eidem perpendicularis.

7 Impoſſibile eſt ab eodem oculo punctũ ſecundũ ſuperficiem/aut corpus videri: a diuerſis autem contingit.

Linee.

1 Linee viſus/eſt ſupficies triãgularis: cuius conus i oculo/baſis vero linea que videtur.

3



2 Recte linee ſimplex eſt viſus. curue vero triplex: cõcauus/cõuexus/et neuter.

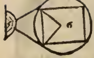
3 Oculus cõcauo aſpectu/quãcũq; circũferentie portionẽ intueri poteſt: totã vero circũferentiã minime.

4 Conuexo vero aſpectu neq; maiorẽ/neq; mediã: ſed ſolam minorẽ intuetur.



5 Si oculus curuã lineã cõuexo intueatur aſpectu: fueritq; angulus viſionis in oculo factus/alicuius poligonie equilatere et equiãgule figure angulus: erit

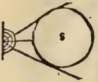
curue pars viſa tota ſue circũferentie pars/quota eſt eiuſdẽ figure ab eius la
teribus et angulis ſũpta denoiatio. cui ſubtẽta chorda/erit eiuſdẽ poligonie
toti circũferentie inſcribende latus.



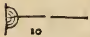
Vnde ſit vt ſi idẽ angulus fuerit rectus: curue conuexo aſpectu viſe pars/ſit 6
totius circũferentie quarta. ſi vero acutus: quarta parte maior. ſi deniq; obtu
ſus: quarta minor.



Rectam lineã/aut curuã cõcauo aut cõuexo aſpectu oculus inſpiciens: eandẽ 7
ſecundũ planã ſuperficiẽ videt.
Si curuã lineam conuexo aſpectu intueatur oculus: erunt extreme viſus linee 8
que in oculo angulũ claudunt/eandẽ curuã contingentes et inter ſe equales.



Si curue linee neuter fuerit aſpectus/et ea quidẽ circũferentia: erit totius viſio 9
nis orbicularis ſuperficies/rotũde pyramidis circũferentia. Si vero circũferẽ
tie portio/erit viſionis ſuperficies totius circũferentie pyramidis pars.
Si recta linea ab oculo videatur: fueritq; linea recta ab oculi centro ad viſam li 10
neã educta/eidẽ directa: vnũ tantũ viſe linee punctum/oculus ex neceſſitate
deprehendet.

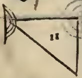


Si vero recta linea ab oculo ad viſam educta/eidẽ in medio eius pũcto perpẽ= 11
diculariter incidat: erit viſionis triangulus oxigonius/aut orthogonius iſo=
ſceles/aut iſopleurus. Q; ſi in extremo puncto fuerit perpendicularis: erit
viſionis trigonus orthogonius.

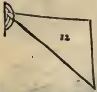


Si vero recta linea ab oculi centro ad viſã procedens/nulli eius puncto perpẽ 12
diculariter incidat: erit totus viſionis trigonus ambligonius.
Impoſſibile eſt linee viſum/corpus eſſe. 13

Superficiei.



Orbicularis ſuperficiei duplex eſt obtutus/concauus et conuexus. 1
Contingit concauo obtutu quãcũq; orbicularis ſuperficiei portionem intue 2
ri: totã vero orbicularem non contingit.
Conuexus viſus: orbicularis ſuperficiei portionẽ neq; maiorẽ/neq; mediam/ 3
at ſolam minorẽ ex neceſſitate deprehendit.
Orbiculariũ ſuperficierũ concaui et conuexi viſus: paribus curuarũ linearum 4
intuitionibus proportionantur.



Vtriq; ſphericarũ ſuperficierũ viſus: ſunt pyramides rotũde/quarũ baſes ſũt 5
orbiculares ſuperficies conſpecte.
Circuli itẽ viſus: eſt pyramis rotunda/cuius baſis ipſe eſt circulus. 6
Si recta linea ab oculi cẽtro/ad viſam planã ſuperficiem ducta fuerit eidem di= 7
recta: extremas dũtaxat eius lineas oculus intuebitur.



Si vero ab oculo linea recta/ad viſã ſuperficiẽ planã ducta eidem ad angulos 8
occurrat: eandẽ totã ſuperficiẽ oculus deprehendet.

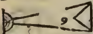


Figure plane poligonie viſus: eſt laterata pyramis/totidẽ laterũ et angulorũ. 9

Corporis.

propriũ corporis interuallũ: eſt profunditas per ſe inuiſibilis. 1
Vnde ſit vt et corpus/propria dimenſione ſit inuiſibile. 2

3 Corporis oculo obiecti ſolos angulos/aut latera/aut extremas ſuperficies intuemur.

4 Hinc vniuerſe corporũ intuitiones/in ſuperficierũ aſpectus reſoluuntur.

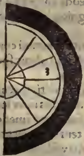


Speculi concaui.

1 Omnes radij a centro ſpeculi concaui ad ipſũ educti:in ſeipſos reflectuntur.

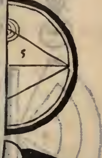
2 Hinc rei in ſpeculi cõcaui centro poſite/non videtur imago:in quo ſi cõſiſtat oculus/ſeipſũ ſolũ ex reflexione intuebitur.

3 Si circulus aut ſphera concauo ſpeculo concentrica ſint:reflexione nulla viſibilia erũt.



4 Semidiametri ſpeculi concaui/nullũ punctũ (preter centrũ quod in ſeipſũ redit) ad aliquod eiuſdẽ ſemidiametri punctũ a ſpeculo reflectitur.

5 Quo fit vt oculus in ſpeculi cõcaui ſemidiametro poſitus/nullũ eius punctũ intueatur. qui ſi extra centrũ fuerit/nec ſeipſũ quidẽ videbit.



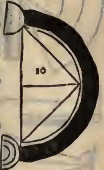
6 In ſpeculis concauis:contingit et ab vno tantũ puncto/et a duobus/et tribus/et quatuor:minime autem a pluribus punctis ſpeculi/ad eundẽ oculũ fieri reflexionem.

7 Hinc in ſpeculis concauis:poſſibile eſt eiuſdẽ rei et vnam tantum et duas/et tres/et quatuor imagines apparere:minime autem plures.

8 In ſpeculis concauis res interdum maiores/interdũ equales/interdũ et minores videntur.

9 Specula concaua ad ſolem conuerſa:ignẽ ex radiorũ reflexione gignunt.

10 Si concauo ſpeculo vel diameter/vel chorda ſubtendi intelligat̃:in cuius vno extremorũ/res viſibilis ſit collocata:eandem in altero ſolo eius extremo poſitus oculus/ex reflexione deprehendet. in quolibet vero alio puncto conſiſtens:nullã eius intuebitur ſpeciem.



11 In concauo ſpeculo:radij ab extremis/ad mediũ colliguntur.

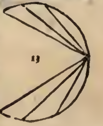
12 Concauum ſpeculũ et maiore/et media/et minore ſphere portione conficit̃.

13 Si cõcauum ſpeculũ fuerit medie portionis:extrema ſue diametri puncta/ad angulos rectos reſiliunt. ſi vero maioris/ad angulos acutos:ſi minoris/ad obtuſos.

Conuexi.

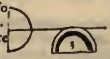
1 Due recte linee ab eodẽ pũcto ad ſphericũ corpus educte/idẽ cõtingentes:minorẽ eius portionẽ ex neceſſitate claudunt.



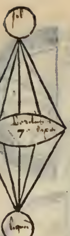


2 Hinc cõuexũ ſpeculũ/et maiore et media ſphere portione ſupfluit:minore vero portione factũ/vtile eſt totũ.

3 Rei viſibilis radius conuexũ ſpeculũ contingens:non reſilit/ſed continuus atq; directus ad vlteriora tendit.



4 Rei viſibilis radius ad extremũ diametri conuexi ſpeculi punctũ directus:ad angulos rectos redit. Qui vero extra diametri extremũ intelligit̃ protendi:



açutũ angulum reflexus gignit. Q ui autem citra(non tranſiens per centrũ) obtuſum.

Cõuęxũ ſpeçulũ ſuſceptos radios minus continet:eoſq̧ a medio ſui ad extrema diſpergi ſinit. 5

Vnde fit vt debilior ſit radiorũ a cõuexo:q̄ a cõcauo ſpeculo reflexio:minuſq̧ in conuexo ſoli expoſito/q̄ in concauo/ignis generetur. 6

Conuexũ corpus tranſparens/ac aere denſius ſoli expoſitũ:fractis radijs ſub eodẽ corpore/ad perpendicularẽ cõcurrentibus ſubiecta corpora adurit/gignitq̧ in eis ignem. 7

plani.

Inter concauũ conuexũq̧ ſpeculũ/planũ eſt mediũ vtriuſq̧ equalitas. 1

Hinc in planis ſpeculis:neq̧ maior neq̧ minor apparet imago ſed equalis/ac vera. 2

Si incidẽtis ſpeculo plano radij angulus fuerit recti medietas:erit reflexionis angulus inter incidentẽ/reflexũq̧ radiũ factus rectus. Si vero prior angulus fuerit recti medietate minor:erit angulus inter vtroſq̧ radios obtuſus. Si autem maior:acutus. 3



Rei viſibilis radij plano ſpeculo/aut equidiſtãtes/aut directi:minime ab eodẽ reflectuntur. 4

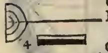
Impoſſibile eſt a rei viſibilis centro/ad ſpeculũ planũ:radios vno plures eſſe perpendiculares. 5

Specula plana oĩm planarũ figurarũ modis coaptantur. 6

Figure ſpeculi plani diuerſitas:nullã reflexionis/aut apparentis imaginis diuerſitatem affert. 7

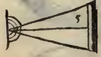
In ſpeculis planis fit rei viſibilis ab vno tantum pũcto/ad quemlibet oculum reflexio. 8

Q uare et in eiſdem ſpeculis/vna tantum apparet imago. 9



In planis ſpeculis illic apparet imago:in quo viſuales radij/cum catheto concurrunt. 10

Cathetus eſt linea recta a re viſibili/ad ſpeculum perpendicularis. 11



Duobus aut pluribus oculis/in plano ſpeculo eadem rei viſibilis imago demonſtratur. 12

perſpectiuę
Introductionis/
finis.

¶ Errata in geometrico introductorio et cęteris conſequentibus ad finem vſq; perſpectiuę intro=ductionis deprehenſa.

¶ Folio 49/epiſtolę titulo/veromandius:lege veromanduus.
Folio eodem/prima ſuperficie/18 linea/affectibus aduerſum ſeipſos diffiden=res:lege diſſidentes.
Eodem folio atq; ſuperficie/linea 31/modo per illud:dic per aliud.
Folio eodẽ/ſupficie et linea ſecũda/minime liceat vbi ſit aſſignari:lege vbi ſit.
Folio eodẽ/ſuperficie ſecũda/linea 16/perdix qui et talãs dictus:lege talaus.
Folio 53/ſuperficie ſecunda/proprietate quoq; ſecunda linearũ cõſequẽtium/reſpectus duo puncta:lege duo ſunt puncta.
Folio 54/ſecũda eius ſupficie/ſeptima ꝓprietate cõtinuãtiũ terminorũ/partẽ reſiduã collocari:dic collocati.
Folio 56/prima ſupficie/tertia proprietate mediorũ inequaliter/inequale aut nullũ ineſt:tolle aut.
Folio eodẽ/ſecunda ſuperficie/in diffinitionibus portionũ circũferentie/tertia linea/ipſũ vt portionẽ claudens:dic intra portionem.
Folio 59/ſecunda ſupficie/ſeptima proprietate medie portionis. Si in medio: dic in medie.
Folio 60/prima ſuperficie/octaua directarũ linearum proprietate/angulos ad vtrũq;:lege ad vtramq;.
Folio 62/prima ſuperficie/quita linea tituli incõmẽſurabiliũ/pars eſt alterũq; dimetitur:dic alterã.
Folio 67/prima ſuperficie/titulo hexagonorum/equilateri vniformis:dic vni formes.
Folio 70/prima ſupficie/quita medij recti anguli proprietate/in ea parte factis quattuor:lege equantur.
Folio 72/ſecunda ſuperficie/duodecima iſopleuri proprietate/ſinguli per ſe: dic ſingule.
Folio eodẽ/eadẽ ſuperficie/16 iſopleuri proprietate/et ad totam circuli dia=metrum ſeſqualter:lege ſeſqualtera.
Folio 86:ſecũda ſuperficie/quarta linea cõmẽtarij 24 propoſitionis/g recta g m per lineam:dic ſuper lineam.
Folio 87/prima ſuperficie/14 linea cõmentarij 25 propoſitionis/ter angulus d e p latera:lege lateri.
Folio eodẽ/ſecũda ſuperficie/tertia linea/dati erit circũſcripti medietas/tolle circũſcripti:et lege dati erit medietas.
Et paulo poſt eadẽ linea/quadratus circulo inſcriptus eidẽ circulo:lege inſcri ptus circũſcripti eidẽ circulo/et quod a priore defectu tollis: ſequẽti adde.
Folio 94/prima ſuperficie/quinta proprietate colorũ puniceí viridis et pur=purei/tres precipui viridis:lege yridis.

Iacobus Stapulenſis ſpectabili viro Germano Ganaienſi/conſiliario regio/decano bellouacenſi.

v T ſilentio pretereãtur egregie Germane/ſiderum ſolertes indagatores Aſſyrij et Egyptij: non minus accurate huius rei diligentie grecorum leguntur q̃plurimi/vt Ptolemeus/ Cleomedes/Proclus/Theon/Poſſidonius/Eratoſthenes/Hipparcus Aratus. Neq; latini defuerunt/vt Cato cenſorinus/M.manilius/Nigidius figulus.M.Varro/Iullius maternus/Caius ſulpicius: qui laudes ex deprehẽſis celeſtiũ motionibus/ſibi conquiſiere. Quare poſt tãtorum virorum commendata ſtudia: res michi viſa nõ eſt aſtrorum cognitio/non magnipendi digna. Luſtraui igitur eam preſertim Aſtrologię partem: quę prorſus ſinceram et liberalem/in ſe continet contemplationem (quam theoricen appellant) et quę philoſophię pars vna eſt è ſeptem non ignobilis. et luſtrãdo quaſi capita quędam/ſũmaſq; rerum per artificium collegi. vt iis ſaltẽ proſim: qui minus in ea diſciplina fuerint inſtructi. collecta verò tuo nomini (vt pleraq; alia) nũcupaui. Et proderit tum maximè: ſi diagrãmata/linearũq; et ſuperficierum deſcriptiones/ſubiectę erunt oculis: aut eorum quę dicuntur/ſolidę quedam repreſentationes. quod inſtructiorum rudioribus munus erit prouidere. nõ enim cõmodè excudi potuerunt. Quocirca qui mentem ad ritè effingendũ melius habent affectam: promptiores ſunt vt dicendorum conſequantur intelligentiam/pariter et qui ſupputationum maximè aſtronomicarũ ſunt induſtrij. Nam hec Aſtrologię pars tota ferme imaginaria/effictrixq; eſt. Et haud ſecus q̃ rerum ſapientiſſimus/optimuſq; opifex veros cęlos/et veros motus diuinę mentis opificio producit: mens noſtra ſui ſemper emula parentis (cum ignorantię labes pluſculum detergitur) effictos cęlos/effictoſq; motus intra ſe profert/verorũq; motuum ſimulachra quędam/in quibus vt in veſtigiis diuinę mentis opificij deprehendit veritatẽ. Eſt igitur Aſtronomi mens/cũ cęlos, celorũq; motus grauiter effingit: ſimilis rerum opifici cęlos/cęlorumq; motus creanti. niſi tanta maieſtas: tam humilis rei comparationem dedignetur/et fugiat. et cum ex ipſorum iam effictorum contẽplatione/motus eorum tum errores, vagoſq;/tum inerrabundos apprehendit: illi ipſi in quadam adumbratione aſſimilatur/cum ethereas molitiones mundo circũducit/ſuę ſapientię et bonitatis opes/a ſummis corporibus ad infima deriuans. Iterũ mens ſimilis eſt oculo in quo etherei orbes/orbiumq; motus ſine confuſione repreſentantur. Verũ manifeſtum eſt nullam aliam mortaliũ rerum/ad hęc ſpectacula admitti: immortalia autem, et ſupermundana nichilominus admitti omnia. qua in re mens noſtra ſe declarat eſſe diuinam/et immortalis naturę ſociam/atq; affinem: vt quę ſola ius in celo/ipſum apprehendendi cum immortalibus retinet/haud ſecus ac ſi in ipſorum immortalium regionibus degeret. Id enim quis dubitat: ex immortalis naturę cognatione illi obtingere? Abſit igitur vt ex huiuſmodi ſidereorum corporum contemplationibus: aliud tandẽ mereamur q̃ diuinę ſapientię/et bonitatis laudes/gratiarumq; actiones/qui nos naturę immortalis conſortes et eſſe voluit/et effecit/eiuſq; cognitionis oppido q̃ cupidos. ſtudeamuſq; illi continuò in melioribus notis/aſſimilationibuſq; placere. Erraret enim plurimum: qui in horoſcopi obſeruatione/et aliorum locorum erectione/harum ſpeculationum finem ſtatueret. in quibus genethliaci: caldeę et egyptię gentilitatis veſtigiis inſiſtentes/vanè conterunt operam. Et quibus hec nõ ſatis erunt: magnam Ptolemei adeant compoſitionem/ad quam hęc ſpeculationum compendia/non parum preparant. et hęc ſatis prefata ſint. Nunc autem ad rem ipſam. Vale.

Iacobi Fabri Stapulenſis Aſtronomici theorici corporū celeſtiū Liber primus.

¶De orbe.
Circulis
Apogio
Epicyclio
Motu
Axe
polis
Centro
Argumento
Equatione
Minu. ꝑportiona.
Diuerſitate diame.
Dracone
¶Orbe
Concauo
Solido
Toto
particulari
Homocentro
Eccentro
partim eccentro
Oifariā eccentro
Deferēte apogiū
Deferēte ſidus
Sine epicyclio.
In epicyclio.
¶Circulis
Eclyptice
Eccentro
Equante
Epicyclo
¶Apogio
perigio
Deferentis
Equantis
In ſecūda ſignifica.
Epicyclij
¶Apogio epicyclij
Medio
Vero
¶Epicyclio
Lunę
Saturni
Iouis
Martis
Veneris
Mercurii
¶Motu
In longū
In latum.
¶In lōgum.
Medio
Vero
Sideris
Epicyclij
Centro
Medio
Vero
¶Argumento
In eccentro
In epicyclio
¶In epicyclio
Medio
Vero
¶Equatione
Centri
In epicyclio
In ſignifero
Argumenti
¶Minu. ꝑportiona.
Lune
Saturni
Iouis
Martis.
Veneris.
Mercurij
¶Diuerſita. diame.
Ad lōgitu. remo.
Ad ꝓpinquiorē.
¶Dracone.
Capite
Cauda.
Lune
Saturni.
Iouis
Martis
Veneris
Mercurij
¶De primo mobi.
Nono mobili.
Octaua ſphera.
De ſole
Luna
Saturno
Ioue
Marte
Venere
Mercurio.

Hęc eadem ſunt.

απογειον A terra ſemotum.
περιγειον επιγειον Terreſtre.
αναβιβαζον. Aſcendere faciens.
καταβιβαζον. Faciēs deſcendere.

¶.Apogium/aux/abſis ſumma/ſummūq; faſtigium.
¶perigium/epigium/oppoſitum augis/abſis ima/imūq; faſtigium.
¶Caput draconis/nodus boreus/anabibazon.
¶Cauda draconis/nodus notius/catabibazon.

¶De orbe. Cap.I.

o

Rbis eſt: quod vna ſuperficies cōtinet/equaliter a media orbis nota vndiquaq; diſtās. Media illa nota: centrū orbis appellat̃. Sup̄ficies orbē ipſū cōtinens: cōuexū/ambitus/circuitus/circūferētiaq; noiat̃. 1

Cōcauus orbis dr̃: q duabus cōtinet̃ ſup̄ficiebus/ſūma videlicet atq; ima. Sūma: cōuexū/ābitus/circuitus et circūferētia dicta iā ē. Ima vero noiat̃ cōcauū. 2

Solidus orbis eſt: qui vnica ſuperficie continetur. ſūma enim contentus: imā continentem repudiat. 3

Totus orbis dicit̃: qui tū ad alicuius ſyderis/tū ad eius apendicū motū requiritur ac ſatis eſt. particularis vero: qui ad partē. Appēdices apello: vt ſūt epicyclia/abſidum faſtigia/interſectionum pūcta/qui et nodi/et anabibazon et catabibazon dicuntur/et huiuſmodi. 4

5 Orbes toti/totis orbibus:et particulares particularibus ſunt attigui.

6 Orbis homocentrus appellatur:cuius centrū/mūdi centrū eſt.Centrū mundi/terre centrum.

7 Orbis eccentrus:cuius centrū/mūdi centrū neutiq̄ eſt/ſed ſupra/infraue/aut altrorſus illud habet.

8 Orbis partim eccentrus:cuius cōcauū eccentrū/et cōuexū homocentrū aut cōcauū dūtaxat homocentrū/cōuexum vero eccentrum eſt.

9 Omnifariā eccentrus:cuius cōcaui et cōuexi cētrū/extra mūdi centrū ſitū eſt.

10 Totales ſphere/totiq; orbes atq; globi:mūdo homocentri ſunt. particulariū vero:hi prorſus eccentri/illi partim eccētri reperiuntur.

11 Orbis deferens abſidis faſtigiū:eſt particularis orbis/ad cuius motū/abſidis faſtigiū deferri dicit̄. Si ſūmū/ad extimi:ſin imū/ad infimi.

12 Orbis deferens ſidus:eſt ad cuius motū/ſidus ſub ſignifero defert̄. Si ſidus/epicycliū habet:idem orbis dicitur deferens ſidus/et deferens epicycliū/epicyclijq; centrum.

13 Sidera que epicycliū habent:Luna/Saturnus/Iupiter/Mars/Venus/Mercurius.

De circulis. Cap.II.

14 Irculi intelligūt̄:plane ſupficies/vnica linea(que a media(pari vndiq; interuallo)nota diſtat)contente. Hec autē media nota:centrum circuli appellatur.

15 Circulus ecliptyce:eſt ſuperficies plana/cuius circūferētia eſt linea ecliptyca/et cētrū/mūdi cētrū. Et idē:planicies/ſupficieſq; plana ecliptyce dicitur.

16 Circulus eccētrus alicuius ſideris:ſuperficies plana/cuius cētrū/eccentri cētrū/et in cuius circūferētia ſideris aut epicyclij cētrū defertur. ſideris quidē: in imunibus epicyclij. porro epicyclij:in habentibus epicyclia. Et idē circulus:planicies/et plana eccentri ſuperficies dicitur.

17 Circulus equans intelligitur eccentro ſidus deferenti equalis:ad cuius cētrū ratione habita:regulariter epicyclij centrū mouetur.

18 Circulus epicyclus:eſt in cuius circūferentia ad epicyclij motū/ſideris centrū defert̄. Qui et idem circulus eſt:cuius circūferentiā/ſideris centrū ad epicyclij motum deſcribit.

De apogio et perigio. Cap.III.

19 pogiū eſt circuli eccentri punctus a mundi centro abſiſtentiſſimus.
a perigiū:punctus eius in maxima ad mūdi centrū vicinia. et hec:eccentri/abſidūq; faſtigia/ſummū imūq; dicunt̄. Eccentrus deferens/eccentrus equans.

20 Apogij perigijq; puncta per lineam rectam a mūdi centro ad circuli eccentri circūferentiā/ambitūq; porrectā determinantur.

21 Apogiū et perigiū ſemp in eadē linea puncta ſunt aduerſa/e regioneq; collocata. Et apogij punctum lōgitudo remotior. perigij vero:lōgitudo propinquior etiam appellatur.

22 pars linee determinātis illa pūcta a mūdi cētro ad ſūmū eccentri faſtigiū apogijq; punctū:linea longitudinis remotioris dicitur. pars reliqua:linea dicit̄ longitudinis propinquioris.

Longitudines medie:pūcta ſunt inter ſumū/imūq; faſtigiū contenta:mediam 23
ad mundi centrū:diſtantie rationē ſeruantia.

puncta illa determinat linea a mundi centro ad linee ſup faſtigiorū linee me- 24
diū eccentricitatis pūctū perpendiculariter erecte in circuli eccentri circūfe-
rentie cōtactū/occurſūq; directa. Et hec linea:circuli eccentri ſemidiametro
equa eſt.

Apogiū in ſecūda ſignificatione:eſt arcus ab arietis initio ſecundū ſignorū cō 25
ſequentiā ad ſūmi faſtigii pūctū ſupputatus. ¶ De epicyclio. Cap. IIII.

picycliū/ſolidus orbiculus eſt/in orbis eccētri craſſitudine cōtētus: 26
e cuius centrū in circuli eccētri circūferentia de occidēte per meridiē
in oriētem/demū in partē occiduam recurrens/continuo defertur.

Apogiū epicyclii mediū:eſt circūferētie epicyclii pūctus quē linea recta a cer 27
to pūcto/cētro eccētri oppoſito/aut a cētro equantis per epicyclii centrū ad
eius circuitū eiecta/determinat. In luna quidē ab huiuſmodi pūcto oppoſi-
to:in reliquis autem ab equantis centro.

Apogiū epicyclii verū:eſt pūctus circūferētie epicyclii quē rectā a cētro mūdi 28
per epicyclii centrū traiectā finit/atq; terminat. ¶ De motu. Cap. V.

Edius motus:eſt ſigniferi arcus ab arietis initio ad medii motus li- 29
m neā/ſupputatus. Q; ſi motus ſecūdū ſignorū cōſequiū fuerit:fit hec
ſupputatio ſecundū ſignorū cōſequētiā. ſin cōtra:et cōtra. Signorū
cōſequētia/ſucceſſioq; intelligit̄:dū ab ariete ꝑ taurū ad dioneorū vſq; piſciū
finē/procedimus. Cōtra vero cōſequētiā ac ſucceſſū:dū ab ariete per piſces
rurſus euadimus ad principium.

Linea medii motus nō vno modo dicit̄:quapropter ſuis in locis varie peculia 30
riter diffiniet̄. planeta/epicycliū/apogiū/catabibazon.

Verus motus:eſt arcus ſigniferi ab arietis initio ſecundū ſignorū ſequelā/ad 31
veri motus lineā ſupputatus. Linea veri motus eſt linea recta a mūdi centro
per centrum aut notam eius cuius motus queritur ad ſigniferum porrecta.
planeta/epicycliū/apogiū/catabibazon.

Motus in longum:eſt qui ad orientem aut occiduam partem fit. Motus in la 32
tum:eſt qui fit in boream/aut notum.

Medii motus et veri:ſecundum longum ſumuntur. 33

Medius motus epicyclii:eſt arcus ſigniferi ab arietis initio ad medii motus 34
epicyclii lineam/ſupputatus.

Verus epicyclii motus:ab eodē ſigniferi principio ad epicyclii veri motus li- 35
neā ſupputat̄. Linea medii motus epicyclii:a centro mundi ad ſigniferū por
recta/linee ab equantis centro per epicyclii centrum exeunti/paralella/atq;
equidiſtans eſt. Linea veri motus epicyclij:a mundi centro per epicyclij cen
trū ad ſigniferum traijcitur. ¶ De axe/centro/et argumēto. Cap. VI.

Xis:eſt linea circa quā cōuertit̄ orbis. Axis extremitates:poli/cardines: 36
a verticeſq; nūcupantur.

Centrū mediū:eſt arcus a ſummo deferētis faſtigio/apogioq; ad medij 37
motus in epicyclio lineam.

motus in epicyclio lineam.

38 Centrum verū:arcus eſt ab eadē apogij linea/ad veri motus in epicyclio lineā. Verum/equatum.

39 Argumentū in eccētro:eſt arcus ſigniferi inter apogij et medij motus lineas/ ſecundū ſignorū cōſequentiam interceptus.

40 Argumentū mediū in epicyclio:eſt arcus circūferētie circuli epicyclij ab eius medio apogio:ſecundū ſideris motū ad centrū vſqꝫ ſideris ſupputatus.

41 Argumētū verū in epicyclio:eſt arcus ab apogio vero i eā parrē ad quā ſidus deuergit/ad ſideris centrū identidem ſupputatus.

42 Equatio centri in epicyclio:eſt arcus circūferentie epicyclij:verū eius apogiū/ mediumqꝫ interiacens.

43 Equatio cētri in ſignifero:eſt arcus ſigniferi lineas medij et veri epicyclij motus interueniens.

44 Equatio argumenti vbi epicycliū deeſt:arcus eſt ſigniferi inter medij motus et veri motus lineas incidens. Vbi vero epicycliū adeſt:arcus eſt ſigniferi inter veri motus epicyclij et veri motus ſtelle lineas incidens

¶De minutis proportionalibus/diuerſitate diametri et dracone. Cap. VII.

45 Minuta proportionalia que et proportionis ſcrupula:ſunt exceſſus longitudinū in ſexaginta diuiſus. Et in luna ſumunt ſimpliciter. In ſaturno/ ioue/marteqꝫ et venere dupliciter. In mercurio:tripliciter.

46 Diuerſitas diametri:eſt differētia exceſſus eqtionū argumētorū ad ſuas correlatiuas/dū epicyclij centrū in puncto a mūdi centro remotiſſimo et in eius oppoſito cōſtituiť/et interdū in media lōgitudine/mediocriqꝫ abceſſu.

47 Exceſſus medie lōgitudinis/abceſſuſue/et pūcti remotiſſimi:diuerſitas remotior. Et medie longitudinis exceſſus/abſceſſuſue et puncti propinquiſſimi: diuerſitas propior appellatur.

48 Draco dicitur figura interſectionis circuli eccētri et ſupficiei plane eclyptice octaue ſphere in punctis oppoſitis. Interſectionis punctus:in quo dū fuerit vtrimqꝫ deuiātis epicyclij cētrū/ab eclyptica fertur/euaditqꝫ in boreā:catabibazon/caput draconis/capitiſqꝫ nodus dicitur.

49 pūctus capiti e regione collocatus:anabibazon/cauda draconis/caudeqꝫ nodus appellatur.

50 Vbi epicyclij cētrū ſolū aut in boreā deuiat aut in notū:caput draconis eſt interſectionis nodus/a quo epicyclij cētrū in equātis apogiū nitiť. Et pūctus illi e regione conſtitutus:cauda/noduſqꝫ caude nominatur.

¶De numero celeſtium globorum et de decimo globo. Cap. VIII.

51 Decem ſunt celeſtes globi:de quibus hoc ordine determinatio ſuſcipienda. Decimus globus qui et primū mobile. Nonus/octauus/Solaris/lunaris/Saturnius globus/Iouius/Martius/Venereus/et mercurialis:

52 primū mobile:ſēp vno/eodēqꝫ et maxime ſimili/ regulariqꝫ et irrequieto motu in quatuor et viginti horarū ſpacio ab exortu per ſūmū celū meridieqꝫ in exortū recurrēs/ſuū cōplet circulū. huius motus axis:per cētrū mūdi trāſit/

axiſq₃ mūdi dicit̃. Cuius extremitates: poli/vertices/cardineſq₃ mūdi idētidē nūcupant̃/equali/ab equatore circulo interuallo/omi ex parte diſtantes.

Huic equatori/equinoctialiq₃ linee: magna accreſcit dignitas/ꝙ p eā diuiniſſi 53
mus globus/ipeq₃ mūdus cōuertit̃. Huic pricipi ſphere ſolus hic ac vnicus/ ocyſſimus et inexiſtimabilis celeritatis motus/ſēp ſibi ſiſis/ſēp cōſtās/oifor mis: et nichilominus maxie vnus/idēq₃ et ſipliciſſimus et vniformis cōgruit.

Hec inferiores oēs ſua celeritate tātillo tēporis ſpacio ſemel circa mūdū ſecū 54
ducit: niſi quātū in aduerſū ꝓpriis motibus nitunt̃. Inferiorū ei multitudo/ tātaq₃ ſtellarū/aſtrorū/ſiderūq₃ turba: hāc vnā ſequi videt̃. quaſi oia: primo/ primeq₃ vnitati ſēp eidē et ſibi ſimili/cūcta tamē mouēti pareāt/obſequāt̃q₃/ et nichil in rerū ordie appeat niſi diuinitatis motus. puerſa etei rerū cōfuſio: et a natura diuinitatis/aliena.

¶De nono celeſti globo. Cap. VIII.

Oni globi duo ſūt motus. primus mūdanus/qui et diurnus: quo inexi 55
n ſtimabili primi mobilis volucritate ſemel diurne ab exortu p ſūmū celū circa mūdū ducit̃ i exortū. huius motus/et axis et poli: axis et poli mūdi.

Secūdus motus eſt illi ꝓprius: quo in aduerſū nitit̃ ſemel ab occiduo p ſubli= 56
Anni 49000 me celū/vndequiquagenis annorū milibus prius exactis i occiduū remeās.

Axis huius motus: axē mūdanū i mūdi cētro ſecat. Et poli eius: poli ſignife
g. | m. | 2. ri dicunt̃: a polis mūdi iugi conſtantiq₃ inuariabilitate partes tres et viginti/
23 | 33 | 30 ſcrupula triaq₃ et triginta/ſecunda quoq₃ triginta diſtantes.

Medius autē huius noni globi ſigniferi/limes (quā eclypticā dicūt/linea eſt p 57
quā ipe rapidiſſimo prime lationis motui/eo qui dictus eſt motu it obuius/ obliquuſq₃ incedit: ea tamen lege vt ſemp equatorem in arietis et libre pri= mordialibus punctis deſecet.

Motus huius mobilis/i abacis aſtronomicis/numerorūq₃ ratiocinationibus: 58
medius apogiorū/et inerratiliū ſtellarū motus appellatur.

Et eſt huiuſmodi medius motus: arcus ſigniferi primi mobilis/arietis eius/et 59
arietis noni globi capitibus iterceptus. Hūc motū determināt linee a cētro mūdi per ea capitū initialia pūcta ad primi globi ſigniferū traiecte.

Verū autē apogiorū/ſtellarūq₃ motū determinat linea: a mūdi cētro per apo= 60
giorū pūcta et ſtellarū centra ad idē mobile tranſmiſſa.

Eclyptica huius noni circi: ſemper in primi mobilis eclyptice plana ſupficie 61
iacet.

¶De octauo celeſti globo. Cap. x.

Ctaue ſphere tres ſūt motus. primus mūdanus: a primo mobili. Se 62
o cūdus: in aduerſū nitēs/et ex oppoſito factus a nono. Tertius pro= prius: qui motus acceſſus et receſſus appellatur/fitq₃ ad capitū arie tis et libre octaue ſphere i puorū circulorū (circa arietis et libre none capita)
Anni 7000 circūferētiis/motū. Et in ſeptē annorū milibus: puulus ille circulus/ea regu lari rotatione ſemel abitur/trāſigiturq₃. Axis et poli huius motus: quādoq₃ axi et polis ſigniferi noni globi ſunt iidē/et quandoq₃ diuerſi.

Aries/libra/eclyptica/axis et poli octaui circuli/mobilia dicuntur: noni autem 63
dicuntur immobilia.

64 In hoc mo. u initialia cācri et egocerotis pūcta: ſemper in ſuperficie eclyptice none iacent.

65 paruorū circulorū ſemidiametrus: partes quatuor/ſcrupula duodeuiginti/et ſecūda tria habere diffinitur. Et eius centrū/arietis none caput: qui punctus eſt interſectionis eclyptice eius/cū equinoctiali circulo. g. | m. | 2 4 | 18 | 3

66 paruulus hic circulus: ab equatore in duo equa ſecatur. et medietas ſupna(il=la ſc; que citra equatorē ad boreā relinquitur, borea/ſeptētrionalis/arctoaq; dicit. que vero ſubſidet et vltra equatorē deſtituitur ad notū: notia/meridionalis/auſtrinaq; atq; antarctica nominatur.

67 pūctus in ptis arctoe circūferētie medio/quadrātes eius diſtrigēs atq; diſter=minās: ſeptētrionalis pūctus dicit. partis aūt auſtrine: meridionalis pūctus.

68 Is autē qui ariete in ſublimi celo/medioq; cōſtituto reſpicit exortus/oriētis: et qui reſpicit occaſus/occidentalis punctus appellatur.

69 Eclyptica none ſphere itidē paruū circulū in duo dirimit equalia/hic in parte eoa/illic vero in occidua: medietatē ratione quidē ad ſe habita ad ſeptentrionē/et medietatē ad meridiem linquens.

70 Has medietates et parui circuli hemicyclia: ſua ratione per quadrātes media diducūt pūcta/vnū in parte arctoa/et alterū in oppoſita.

71 Medius octaue ſphere motus: eſt arcus parui circuli ſectionē eius cū equatore et arietis mobilis caput intercidēs/p arctoā proficiſcēdo ptē ſupputatus.

72 Equatio motus octaue ſphere: eſt arcus/mobilis eclyptice qui ſectionē eius cū equatore et arietis mobilis caput interuenit.

¶Nūc de quatuor primis punctis/et capite arietis mobilis.

73 Arietis mobilis in ſectionis parui circuli et equatoris pūcto capite cōſtituto: equator mobilē eclypticā in capite arietis ſecat/et tūc quoq; eqtio nulla eſt.

74 Ab eo pūcto: arietis mobilis caput in boreā ſenſim attollit dū in ſeptētrionalē pūctū deueniat. dūq; attollit/cōtinue creſcit equatio/ſecatq; equator alio et alio mobilē eclypticā in arcu piſciū: triceſimā/primāq; et viceſimā partem interuenientem.

75 Capite in eo medio ſeptētrionali puncto cōſtituto: equator mobilē eclypticā in piſciū prime et viceſime partis fine ſecat/ab equatore caput mobile maxime declinat/eſtq; equatio maxima.

76 Ab eo ſeptētrionali pūcto caput arietis ſoluēs: dū in pūctū exortiuū perlatū ſit/quartā ſeptētrionis pronā cōficit/decreſcitq; cōtinue equatio/et equator eclypticā mobilē a prima et viceſima piſciū in trigeſime partis finē ſecat.

77 Capite in pūcto exortus: equator mobilē eclypticā iterum in ipſo arietis initio ſecat/eſtq; tū equatio nulla.

78 Diſcedēte hic capite in notiā partē: pedetētim ad meridionalē pūctū euadit/creſcitq; cōtinue equatio/ſecatq; equator aſſidue alio et alio eclypticā mobilem a prima arietis parte in nonam.

79 Capite arietis in meridionali puncto: equator mobilē eclypticā in none partis arietis fine deſecat/caput maxime declinat/eſtq; rurſū equatio maxima.

A medio partis auſtrine puncto/relabitur caput ad occidualē punctū/decre= 90
ſcitq̧ cōtinēter equatio/ſecatq̧ mobilē eclypticā circulus equator a nona in
primā arietis partē/in ipſo autē occiduali pūcto/in prime partis initio/ipſoq̧
capite:a quo rurſū ſeries diffinite priori ſimilis inchoat.

Dum arietis punctus in occiduo ſui circuli puncto ſtatuitur:et libre pūctus 91
in ſuo occiduo.et dū in exortiuo:et libre in exortiuo.

Dū arietis caput in ſeptētrionali pūcto:libre caput eſt in meridionali/viceſq̧ 92
cōmutant.et oino dū arietis caput partē demeat arctoā/meridiana detinet li
brā.et contra/dū auſtrina tenet arietē:libra meat per arctoā/oppoſita ſemp
ſibi deuendicās loca. Sectionis libre/ſueq̧ partis:ex oppoſito cognoſcunt.

Iterū de eiſdē quatuor primis punctis et capite arietis mobilis. 93

Diſcedente mobilis arietis capite ab occiduali puncto:equationes illico mul= 94
tū creſcūt/et videntur inerratiles ſtelle in ſeptētrionē attolli/celeriterq̧ ab oc
caſu deferri ad exortus.et quo magis ad mediū ſeptētrionis accedit pūctū:
eo minus equationes creſcunt/ſegniuſq̧ ſtelle ferri videntur.

Diſcedente a medio ſeptētrionis puncto:equationes parū decreſcūt.ſtellarū 95
ſegmenta tarda.at prope exortiuū pūctū equationū decremēta accelerāt/
ocyuſq̧ ſtelle perferri videntur.

Ab exortiuo cōtactu diſcedente arietis capite:equationes multū creſcunt et 96
celeriter ſtelle deprimi videntur in auſtrū/et ab exortu tendere in occaſū.Et
quo magis meridionali puncto arietis caput acceſſerit:eo ſegnius ſtelle fer=
ri videntur.

A meridionali pūcto:lente ad ſeriē ſtelle ſeſe recipiunt.et tāto velocius:quā= 97
to caput arietis occiduali puncto inſederit vicinius.

Hac quoq̧ ratione inerratiles ſtelle/interdū progredi/interdū ſtare/interdūq̧ 98
regredi videntur.

Et neq̧ abſimili de cauſa ſtelle alique meridionales/fieri ſeptētrionales:et ſe= 99
ptētrionales alique ac boree/fieri meridionales/declinationēq̧ demutare.

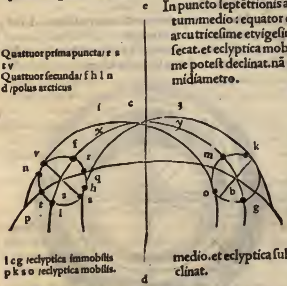
Cū octaue ſphere motus hemicycliū nō trāſcendit/equationes medio tū apo 100
giorū/tū inerratiliū ſtellarū motui ſūt adiiciēde:ſin tranſcendit/diducēde:vt
verus apogiorū atq̧ ſtellarū eliciatur locus.

pūcto arietis in occiduo cōtactu et ſole in eo cōſtituto:ſimul atq̧ veris equi= 101
noctiū eſt/ſol primū arietis punctū intrat.

Dū arietis punctū per arctoā fertur medietatem:ſol prius ad equinoctium(q̄ 102
arietis mobilis caput ſubintret)peruenit.in medio eni ſeptentrionis puncto
capite collocato:ferme dies decē equinoctiū/ſolis in arietē introitū preuenit
In tactu autē exortiuo:ſimul intrat/et ſimul equinoctiū eſt.

Dū fertur in meridianū epicycliū:ſēp ſolis introitus in arietē/equinoctiū pre= 103
uenit:adeo vt i meridiano pūcto cōſtituto/ferme decē dierū interuallo prius
ſol intret arietē q̄ equatore ſubeat/ſitq̧ veris equinoctiū. Et quāto equatio
maior:tanto introitus(ſeu precedit ſeu ſequitur)ab equinoctio remotior.Et
quāto minor:tāto ſit vicinior. ¶De quatuor aliis pūctis et capite mobili.

104 Capite arietis in parui circuli et eclyptice immobilis contactu occiduo: equator eclypticā mobilē in arietis immobilis capite ſecat, et eclyptica ſub eclyptica nuſq̄ deſultans iacet.



105 In puncto ſeptētrionis ad huius contactus ſitum, medio: equator eclypticam mobilē in arcu triceſime et vigeſime prime partis piſciū ſecat. et eclyptica mobilis ab imobili q̄ maxime poteſt declinat. nā tota parui circuli ſemidiametro.

106 In puncto orientalis contactus: iterū eq̄tor mobilē eclypticā in puncto arietis immobilis ſecat. et eclyptica ſub eclyptica ſita eſt.

107 In medietatis auſtrine puncto: equator ſecat in arcu prime et decime arietis pti medio. et eclyptica ſub eclyptica maxime declinat.

Rurſum de eiſdem punctis et capite mobili.

108 Arietis puncto in imobilis eclyptice occiduo contactu: axes et poli vtriuſq; eclyptice iuncti ſunt. cancri mobile caput ab imobili maxime diſtat: ipſum in geminis, partes quattuor et amplius antecedens. nā tota antecedit parui circuli ſemidiametro. maxima vtriuſq; eclyptice declinatio, eadē eſt: attamē caput cancri mobile q̄ imobile multo minus declinat.

109 In ſeptētrionis puncto: axes et poli maxime declinant. capita cancri iūcta ſūt. attamen eclyptice mobilis maxima declinatio, q̄ eclyptice imobilis: maior.

110 In contactu exortiuo: axes et poli iidem. caput ſolſtitiale a capite maxime diſtat: ſed mobile, imobile ſequens. eadem vtriuſq; eclyptice maxima declinatio. caput mobile, minus declinans.

111 In auſtrine partis medio pūcto: vt in ſeptētrionis pūcto axes maxime inflexi. poli maxime diſtantes. ſolſtitialia puncta iūcta. mobilis eclyptice declinatio maior.

112 In contactibus equatoris et eclyptice mobilis capite cōſtituto: eclyptice mobilis q̄ imobilis maxime declinationis inflexio, comperitur minor.

113 Declinationes ſitus et ſectiones ſolſtitiorū brume: ex oppoſito cognoſcūtur.

114 Bis eclyptice, bis axes, bis ſolſtitiorū capita: in vna octaui circuli reuolutione cōiuncta dinoſcuntur: capita tamen arietū vnq̄ cōiunctū iri impoſſibile eſt.

115 Et hac item ratione maximarum eclyptice ab equatore declinationū (ſub qua

ſol demeat)diuerſis in tēporibus cognoſcitur varietas.
Deniq; interdū eſtiuū ſolſtitiū/introitū ſolis in cancrū ſequi/interdū ꝓcedere/ 116
interdū vero ſimul eſſe. Sed hec de octauo globo abunde dicta ſint.

De globo ſolis. Cap. xi.

S Olis tres ſunt particulares orbes. primus extimus/qui ſummū defert 117
faſtigium/apogiiq; punctū ex concauo eccentrus. Secūdus infimus/
deferens perigium eccentrus ex conuexo. Et tertius in horum medi-
tullio collocatus omnifariā eccentrus/ſolare ſidus deuehens.

Orbes qui abſidas 118
deferunt mouētur
primū motu mū-
dano a primo cir-
culo. ſecūdo: ſigni-
feri motu a nono.
et tertio acceſſus/
receſſuſq; motu:
ab octauo. Axes
et poli: mundanus
et octaue ſphere.



Solaris eccētrus or-
bis: preter tres iā 119
dictos motus/ q̄r-
tum peculiarē ha-
bet ac ꝓpriū/ quo
circa ꝓpriū centrū
regulari inceſſione/ſingulo quoq; naturali die ſcrupula nouē et quinquagin-
ta/ ſecūda octo et ferme trientē vnius ſecundum ſignorum conſequentiam
conficit. Axis huius motus per eccētri centrū trāſmiſſus: axi octaui circuli
ſecundum eccentricitatis quantitatem equidiſtat.

Mi.	ſe.	gra.
59	8	19

Eccentricitas appellatur centri mūdi ab eccentri centro diſtantia.
Linea mediū ſolis motū definiens: a cētro mūdi ad ſigniferū extenta/ linee ab 120
eccentri centro ad ſolaris ſideris centrū emiſſe/aut eadem eſt aut equidiſtat.
Orbis ſolis. deferens apogiū. perigiū. deferēs ſidus ſolare. Circulus eccētrus 121
ſolis. Solis apogiū. Solis perigiū. Apogiū i ſecūda ſignificatione. lōgitudo
remotior. longitudo propior. lōgitudo media. Medius ſolis motus. Verus
motus. Axes. poli. Argumentū ſolis. Equatio argumenti.
Cum ſol ſupra eccētri cētrū regulariter feratur: vt ſupra mūdi/quod et ſigni- 122
feri centrum eſt/irregulariter feratur neceſſe eſt.
Eccētri ſolis centrū circa mūdi centrum/et poli eius: circa polos apogiorum 123
ſecundū eccentricitatis quantitatē ad orbiū motū apogia deferentiū/circu-
los deſcribunt.
Apogio ſolis in ſecunda ſignificatione a medio ſolis motu ſubducto: argu- 124

mentum ſolis reliquũ ſit.

125 Verum ſi medius motus forte inuentus ſit contractior: illi circulationis numerus adiiciendus/deinde ab aggregato apogiũ ipſum ſubducendum.

126 Tantũmodo ſole in alterutro ſuorũ faſtigiorũ conſiſtente: medius eius motus atq; verus: vnus/idemq; ſunt. Illic quoq; ſole cõſtituto : nulla argumẽti equatio eſt. at medias prope longitudines/q̃ maxima.

127 Eas/faſtigiorũ linee apogij videlicet ac perigij a mũdi centro ad eccentri traiecta perpendicularis determinat.

128 Quãto ſol alterutri ſuorũ faſtigiorũ propinquat: tãto minor equatio. quãto vero ab illis ad medias longitudines/illi perpendiculari euadit vicinior: tãto equatio maior.

129 Cum ſolis argumẽtũ contractius hemicyclio fuerit: linea medij motus/lineã veri antecedit. et a medio motu equatio ſubducenda: vt verus oriatur. Cum autem amplius hemicyclio creuerit. tunc equatio adiicienda.

De lunari globo. Caput. XII.

130 Vne quatuor ſunt particulares orbes/atq; epicycliũ. primus/ſupremuſq; atq; extimus: mũdo homocẽtrus eſt/capitis et caude lunaris draconis nodos deferens. Secundus: deferens apogium/ex concauo eccentrus.

131 Tertius: lunare deferens epicycliũ/omnifariã eccentrus.

132 Quartus/deferens perigium: eccentrus ex conuexo.

133 Deferentis nodos draconis lune proprius motus eſt contra ſignorum ſucceſſum/conſequentiãq;: ſingulo quoq; naturali die/ſcrupulis tribus/et ſextante ferme vnius circa mũdi centrũ. Axis et poli huius motus: axis et poli octaue ſphere.

m.	2.	3
3	10	38

134 Deferentium apogij perigiiq; lune puncta proprius/peculiariſq; motus eſt: quo ab exortu per ſublime celũ ad occaſum/omni naturali die ſupra mundi centrũ regulari progreſſu vndenis partibus et quinta ferme vnius ꝑferunt.

g.	m.	2.
11	12	18

135 Axis huius motus: ſigniferi axẽ in mũdi centro ſecat. et poli eius : a ſigniferi polis/partibus quinis inuariabiliter declinant.

g.
5

136 Deferentis epicyclij lunaris orbiculũ: proprio ſecundũ ſignorũ conſequẽtiã motu epicyclij centrũ circa mũdi centrũ naturali quaq; die/regulariq; progreſſu/partes tredecim cũ vnius ferme ſeſquiſextante/conficit.

g.	m.	2.
13	10	35

137 Axis huius motus ꝑ eccentri centrũ traiectus: faſtigiorũ axi paralellus eſt/ex equoq; diſtans. et poli: a polis ſecundũ eccentricitatis quãtitatẽ declinãtes.

138 Lunaris epicyclij ꝓprio circa ſuũ centrũ motu/lunare ſidus ſibi defixũ/ſuꝑne quidẽ/ſũmaq; in parte cõtra ſignorũ ſequelam/inferne autẽ ad ſequelã ſecũ ferentis: lune centrum naturali quoq; die/ab epicyclij medij apogij puncto (quiſquis tãdem is ſit) partes tredecim et paulo minus decimaquinta vnius regulariter abſiſtit.

g.	m.	2.
13	3	54

139 Axis huius motus: circũferentie circuli eccentri rectãgulariter inſidet/plana ſuꝑficie ad centri lunaris motũ deſcripta/in eccentri ſuꝑficie plana/continuo

manente. Hec autē eccentri ſuperficies plana dicitur: cuius circūferentiam/
epicyclij centrum/deferentis motu deſcribit.

Punctus eccentri centro oppoſitus/a quo epicyclij medij apogij linea ducit̃: 140
ſemper in parui circuli ambitu/quē eccentri centrū ad orbiū motū lunares
abſidas/faſtigiaq; deferentiū circa mūdi centrum deſcribit/reperitur.

Linea medij motus lune: a mūdi centro ꝑ epicyclij cētrū ad ſigniferū traiicit̃. 141

Linea medij motus catabibazontis capitiſq; lunaris draconis a mūdi centro ꝑ 142
capitis nodū traiicitur ad ſigniferū. Medius eius motus contra ſignorū ſuc-
ceſſum ſupputat̃. Verus autem ad eādē lineā/ſignorū conſequentiā ſeruat.

Media ſolis et lune elongatio: linearum ſolis et lune mediorū motuū diſtātia
interuallumq;/nūcupatur.

Ea duplata/centrū lune mediū reddit. Quo fit vt iterū centrū lune mediū: nō 143
ab re longitudo duplex/duplexq; appelletur interuallum.

Minuta ꝓportionalia lune: ē ſūme lunaris apogij linee ſupra perigij lineā ex- 144
ceſſus/in ſexaginta diuiſus. Et eſt hic linearū exceſſus: eccētricitatis duplus.

Orbis lunaris. Deferens nodos. Deferēs faſtigia. Deferens lunare epicycliū/ 145
ſiduſq; lunare. Lune circulus eccentrus. Equans lune. Circulus epicyclus.
Lunare apogium: perigiū. Longitudo lune remotior. longitudo propior. lon
gitudo media. Medium lunaris epicyclij apogiū. Verū epicyclij apogium.
Lunare epicycliū. Medius lune motus. Verus motus. Axes. poli. Cētrum
lune mediū. Centrū verū. Argumentū in epicyclio medium. Argumentum
verū. Equatio lunaris centri. Equatio argumēti. Minuta lune ꝓportionalia.
Diuerſitas diametri. Draco lune. Caput. Cauda. Medius motus capitis. ve
rus capitis motus.

Orbis lune eccentri circa proprium eius centrū motus/irregularis offendit̃. 146

Itidem et epicyclij circa proprium eius centrum. Lunare epicycliū in apogij 147
vicinia: circa centrū ſuū concitatius/in perigij vero tardiuſculū mouetur.

Eccentrus circulus non ſemper a mobilis ecliptyce plana ſuperficie per equa 148
deſecatur. verum eius apogio latitudinē habente: maior huiuſmodi circuli
portio ad apogij partem deſtituitur.

Latitudo vocatur: ab huiuſmodi plana eclyptice ſuꝑficie in boreā aut notū/ 149
deflexio.

Et fit hec circuli eccentri lune et plane eclyptice ſuperficiei ſectio: ſuꝑ huius 150
eclyptice ſuperficiei diametro/in mundi centro tranſeunte.

In omni media ſolis et lune tū cōiunctione tū oppoſitione: hec tria/ centrum 151
epicyclij lune/medij motus ſolis linea/et apogij eccētri lune pūctus/in eodē
ſecundum longitudinem ſigniferi puncto conſiſtunt.

In mediis autē quadraturis: epicyclij centrum in perigio. Media ſolis et lune 152
cōiunctio dicitur: quoties mediorū ſolis et lune motuū linee/ſimul ſecundū
ſigniferi longitudinem exiſtunt.

Media oppoſitio: quoties in oppoſitis ſiſtuntur/competiunturq; locis. 153

Medie quadrature: cum ſigniferi quadrāte/hoc eſt tribus ſignis diſtiterint. 154

155 Signiferi longitudo: diſtãtia ſecundũ motum in longum factum cõſiderata.

156 Medij motus ſolis linea: ſemper eſt aut cũ lunaris epicyclij centro et lune apogio/aut in eorum medio/aut in amborum rurſus counitorum oppoſito.

157 Subducto medio ſolis motu a lune medio: media eorũ elongatio reſidua ſit.

158 In omni lunari menſe: epicyclij centrũ bis abſidũ/faſtigiorũq; orbes pcurrit.

159 Menſis lunaris eſt a ſolis et lune coniunctione ad proxime reditum/tempus. Si a media ad mediam: medius. ſin a vera ad veram: verus mẽſis appelletur.

160 Epicyclij lunaris centro in vtrouis aut apogio/aut perigio epicycliũ deferentis conſtituto: apogiũ epicyclij medium et verum ſimul tunc/vnũq; ſunt.

161 Cum hec duo lunaris epicyclij puncta differũt: ſemper apogium verum inter medium et id punctum ſub quo alterutrum eorum ſteterat: reperitur.

162 Luna dum in epicyclio ſuperne mouetur/tarda: dum autem inferne/velox/citaq; motu dicitur.

163 Lunaris epicyclij centro in apogio aũt eius oppoſito collocato: centri equatio nulla eſt. maxima vero: paulo infra longitudines medias.

164 Id perpendicularis abſidum linee determinat: ex puncto erecta quod a mũdi centro ex oppoſito vt eccentri centrum pari diſtat interuallo.

165 Epicyclij centro hemicyclo contractiore/equatio cẽtri medio adiicitur argumento: auctiore vero/ſubducitur/vt lune verum eliciatur argumentum.

166 Centro corporis lunaris in apogio epicyclij vero/aut in puncto e regione cõſtituto: argumenti equatio nulla eſt. Maxima vero: dum epicyclij centrũ in circuli eccentri perigio conſtiterit/et ſideris lune centrũ in linea a mundi cẽtro ad circuli eccentri altrinſecus contingentiam educta.

167 Lune argumento vero/hemicyclo contractiore: medij lune motus linea/veri motus eius lineam antecedit/et a medio lune motu argumenti equatio ſubducenda. protractiore autem: adiicienda/vt verus eliciatur motus.

168 Centro epicyclij ab apogio ad perigium proficiſcente: equationes continuo maiores euadunt. Et ſingule q̃ epicyclij centro in perigij puncto conſiſtente fiũt: ſingulis apogij ſibi quidem correſpondentibus protractiores exiſtunt. Et exceſſus illarũ ſup iſtas: diuerſitas diametri circuli lune breuis appellat̃.

179 Lune medij motus linea ad apogij eccentri circuli punctum directa: minuta proportionalia intra circuli illius ambitum coercet omĩa. Ad perigij autem punctũ continet illa extra. ad mediarum longitudinũ latera: quedam intra et quedam extra. Equationes argumẽtorum in aſtronomicis ſupputationibus annotate: ee ſunt que epicyclij centro in apogio exiſtente contingunt.

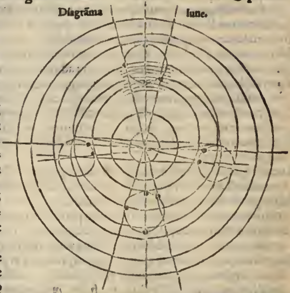
170 Dum lune centrum aliquid eſt/per ipſum minuta proportionalia ſumuntur: et per argumentum verum diametri diuerſitas. que ſi minuta ſexaginta fuerint: tota equationi argumẽti reperte adiicienda. ſi pauciora ſexaginta: ſecũdum minutorum ſexagenariã rationem adiicitur. et ad talem epicyclij ſitũ: equatio argumenti vera enaſcitur.

171 Medio motu capitis draconis lune a duodecĩ ſignis ſubducto: verus eius motus relinquitur.

punctus oppoſitus:verus eſt caude/catabibazontiſq; locus. 172

De globo ſaturni. Cap.XIII

ſ Aturni tres ſūt particu= lares orbes et epicycliū.Supre mus et iſimus de= ferunt abſidū apo= giū atq; perigium. Medius omnifariā eccentrus/ſaturniū defert epicyclum. Qui deferūt apo= gij/perigiiq; pūcta ad octaue ſphere motū/ſigniferū cō ficiūt. Huius mo= tus axis/et poli:oc taue ſphere. 173



Orbis ſaturniū defe rens epicyclium re gulari pgreſſu ſup equātis centrū naturali quaq; die ſecundū ſignorū conſequētiā duo minuta conficit. 174

Axis huius motus:per ipſius deferentis centrū emiſſus/ſigniferi ſecat axem/ 175
et poli a polis ſigniferi inequali diſtant interuallo.

Centrū equantis:punctus in apogij linea deſignatur/ex equo ab eccentri cē= 176
tro diſtans/vt et hoc a mūdi centro diſtare dinoſcitur.

Epicyclij ſaturni duo ſunt motus. primus in longum quo ſaturniū ſidus illi= 177
defixū ſuperne ſecundū ſignorū conſequentiā defertur. inferne autē contra
huiuſmodi ſucceſſum regularis a medij apogij nota diſceſſionis/cōtinuo le
ge ſeruata. Huius motus axis ſuper circuli eccentri circūferentiā trāſuerſa=
liter iacet:axi ſignorum quandoq; equidiſtans/et quandoq; minime.

Secundus eius motus in latū quo ipſum ſaturniū epicycliū nūc in boreā/nūc 178
inflectitur/inclinaturq; in auſtrum.

Linea medij motus ſaturni:a mūdi centro ad ſigniferū traiecta/linee a centro 179
equantis ad epicyclij centrū profecte paralella eſt/ac equidiſtat.

Minuta proportionalia ſaturni ſunt duplicia: remotiora et propinquiora. 180
Minuta pportionalia ſaturni remotiora: eſt exceſſus apogij linee ſup lineā
medie longitudinis in ſexaginta diuiſus. Minuta proportionalia ppiora ſa=
turni:eſt exceſſus medie longitudinis linee ſup perigij lineā in ſexaginta di=
uiſus.

181 Diuerſitas diametri longior: eſt exceſſus equationis argumēti centro epicy-clij in longitudine media/atq; apogio.

182 Diuerſitas autē diametri propior: exceſſus equationis cētro epicyclij in perigio/et longitudine media.

183 Orbis ſaturnius. Deferens apogium atq; eius oppoſitum. Deferens ſaturnium epicyclium. Saturni circulus eccentrus. Circulus equans. Circulus epicyclus. Apogium ſaturni: perigium. Saturnia lōgitudo remotior. Longitudo propior. Longitudo media. Medium ſaturnalis epicyclij apogium. Verū epicyclij apogium. Saturniū epicycliū. Medius ſaturni motus. Verus motus. Axes. poli. Centrum ſaturni mediū. Centrum verum. Argumentū in epicyclio medium. Argumētū verū. Equatio ſaturnij centri in epicyclio. In ſignifero. Equatio argumēti. Minuta ſaturni proportionalia. Diuerſitas diametri. Draco ſaturni. Caput. Cauda.

184 Saturni apogium/eiuſq; oppoſitum nunq̄ ſub eclyptica collocantur: ſed apogium ſemper ad ſeptētrionem: perigium vero ſemper ad auſtrum flectitur.

185 Eadem puncta/eccentri centrum/pariter et poli: ad octaui globi motū/ſuperficierum circūferentias planiciei eclyptice paralellas deſcribunt.

186 Deferens ſaturniū epicycliū: ſuper proprium centrum irregulare cōperitur. itidem et epicyclium circa proprium.

187 Circulus ſaturni eccētrus a plana eclyptice ſuperficie/inequaliter diſpeſcitur: maiorem ad apogij partem portionem relinquens.

188 Saturnij epicyclij centrū quāto vicinius apogio/tanto ſegnius: et quāto oppoſito/tanto concitatius fertur.

189 Apogia verum et medium ſaturnalis epicyclij continuo: euariantur.

190 Ocior eſt ſaturnij epicyclij motus/dum per ſummā deferentis partē: tardior dum fertur per imam.

191 A media ſolis et ſaturni coniunctione ad vicine ſequentem: ſemel reuoluitur ſaturnium epicyclium.

192 In omui ſolis et ſaturni media cōiunctione: ſaturnij ſideris centrum in medio epicyclij apogio conſiſtit. et in omni oppoſitione media: in medij apogij oppoſito.

193 Saturnij ſideris cētrum: tot partibus et ſcrupulis ab apogio epicyclij medio diſtare comperitur: quot et mediorum eius et ſolis motuū linee/diſtiterint.

194 Fit igitur vt medio ſaturni motu a ſolis medio ſubducto: medium ſaturni argumentum reliquum fiat. Et quāto epicyclij centrum tardius ambit: tanto epicyclium velocius feratur/et contra.

195 Medius ſaturni motus motui ſideris in epicyclio adiectus: medio ſolis motui in partibus et minutiis equalis euadit.

196 Centro ſaturnij epicyclij in apogij et in perigij punctis conſtituto: apogiorū mediiq; et veri epicyclij linee/nullo ſecundū longū diſiungūtur interuallo. at mediis in longitudinibus/maxime.

197 Et equatio centri tum ſigniferi tum epicyclij in apogiis nulla: in mediis autē

longitudinibus/maxima.
Medio ſaturni centro hemicyclũ non tranſcendente/ipſum vero maius eſt:et 198
medius epicyclij motus/maior eius vero. Quare tunc equatio cẽtri in ſigni-
fero a medio centro et medio epicyclij motu(vt centrũ verum et verus epi-
cyclij motus relinquantur)ſubducenda.
At medio centro parte circuli dimidia auctiore/vtrũq; mediũ vincitur a vero: 199
et eiſdem equatio adiicienda.
Vt equatio centri in ſignifero ad totum ſigniferum: ita equatio centri in epi- 200
cyclio ad totum epicyclium. et habita vna: habetur et reliqua.
Dũ ſaturnalis equatio centri in ſignifero a medio centro ſubducitur: equatio 201
centri in epicyclio/medio argumento(quo verũ habeatur)adiicitur. Et cum
illa adiicitur: et hec vice cõmutata ſubducitur.
Centro ſaturnij ſideris in apogio vero epicyclij aut in nota oppoſita cõſtitu- 202
to: equatio argumenti nulla eſt. maxima vero in nota contactus epicyclij et
linee a mũdi centro profecte: epicyclij quidẽ cẽtro in ſui deferentis perigio
collocato.
Vero ſaturni argumẽto/hemicyclo cõtractiore: linea veri ſideris motus/lineã 203
veri motus epicyclij antecedit: et equatio argumẽti vero motui epicyclij(vt
verus ſideris motus habeatur)adiicienda. dum autem hemicyclio amplius
excreuerit: ſubducenda.
Saturnij epicyclij centro in ſui deferentis perigio collocato: ſingule argumẽ- 204
torum equationes/ſingulis apogij equationibus illas reſpiciẽtibus maiores
ſunt: in longitudinibus autem mediis/mediocres.
Linea veri motus ſaturnalis epicyclij: omnia remotiora ſaturni minuta ꝓpor- 205
tionalia infra deferẽtis ambitũ coercet. in longitudinibus autẽ mediis omĩa
tenet ſupra. in mediis apogij et medie longitudinis intercapedinibus/q̃dã
ſupra/quedam infra continet.
Eadem veri motus epicyclij ſaturni linea in lõgitudine media: omnia ꝓpiora 206
infra deferẽtis ambitũ arcet/in perigio excludit vniuerſa. in itercapedinibus
mediis quedam intra et quedam admittit extra.
Argumentorũ equationes in numerorũ calculis annotate: ee ſunt q̃ ſaturnij 207
epicyclij centro mediis in longitudinibus conſtituto contingunt.
Epicyclij autem ſaturnalis centro extra mediã deferentis longitudinẽ conſti- 208
tuto/per centrum verum minuta proportionalia: et per argumentũ verum/
diametri diuerſitas agnoſcitur.
Cuius pars proportionalis/equationi argumenti adiiciẽda: ſi propior fuerit. 209
ſi remotior: ſubducẽda. enaſceturq; ad talem epicyclij ſitũ: argumẽti equa-
tio vera.

¶De Iouiali globo. Cap. XIIII

Ouis vt ſaturni: tres ſunt particulares orbes/et epicyclium. 210
i Orbis iouiũ epicycliũ deferens: ſuper circuli equãtis centrũ regulari 211
|m.|2.| |4 |59| progreſſu ſecũdum ſignorũ ſeriẽ naturali quaq; die quina pauxillulo
minus ſcrupula conficit. Cetera vt in ſaturno diffinienda.

¶De pyroentis martioq; globo.Cap.XV.

212 Martis vt ſaturni: tres ſunt particulares orbes/et epicyclium.

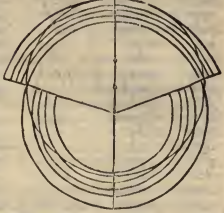


m.	2.	3.
31	26	38

213 Orbis martium deferens epicyclium: ſuper ſui equantis centrũ equo/regulariq; inceſſu ad ſigniferi ſeriẽ ſingulo quoq; naturali die partis dimidiũ et paulominus ſeſquiminuto iugiter abſoluit.Cetera:vt iſaturno diſſerãtur

¶De phoſphori veneriſq; globo. Cap.XVI.

214 Veneris vt triũ ſuperiorũ: tres ſunt particulares orbes/et epicyclium.



215 Orbis/veneris epicyclium deferentis duo ſũt motus. primus in longum. quo ſuper equantis centrum ſecundũ ſignorũ conſequentiam ſingulo quoq; die/ quantũ et ſol medio ſuo motu regulariter incedit. Axis et poli huius motus interdũ accedunt et interdũ recedunt ab axe/poliſq; ſigniferi.

216 Secundus motus in latũ quo veneris epicyclium flectitur deuiatq; in arcton.

217 Venerei ſideris epicycliũ vt ſaturniũ/ſuperne ſecundũ ſignorũ ſeriem/inferne contra ſucceſſum in vndeuiginti ferme menſium interuallo vnã circũuolutionem complet.

218 Apogij et perigij veneris puncta/ſub eiſdem ſigniferi locis/ ſub quibus et ea que ſunt ſolis/conſtanter reperiuntur.

o

Fit igit̃ vt apogio in ſecunda ſignificatione reperto : idē veneris inuentū ſit. 219

Veneris apogiū eclypticā ꝑtranſit:nūc in ſeptētrionē/nūc in auſtrū ꝑagatū. 220

Linea medij motus veneris : ea in ſigniferi parte ſecundū longitudinē/ in qua et ſolaris medij motus linea/terminatur. 221

Vnde fit vt ſolis medio motu reperto: et medius veneris motus repertus ſit. 222

Fit rurſus vt cōtinuo ſolis/veneriſqꝫ media ſit cōiunctio.Cetera vt in ſaturno diſcutienda. 223

¶De ſtilbontis mercurialiqꝫ globo. Cap.XI.

Mercurij quinqꝫ ſunt particulares orbes et epicycliū.Supremus et infimus deferentes equātis apogij/perigiiqꝫ puncta appellantur.Duo proxime illis adiacētes/inequalis craſſitudinis:deferētes puncta apogij et perigij eccētri.Illorū medius cuius eſt equa craſſitudo:orbis eccētrus mercuriale deferens epicyclium nominatur. 224

Supremus et infimus homocētri ſecundū ſuas ſuperficies extremas/eccētri autē ſecundū reliquas/idem eccentricitatis ſue centrum habētes tantum ab equātis centro/quātum equātis centrū a mūdi centro diſtans:motu octaui globi feruntur.Axis et poli huius motus:octaue ſphere. 225

Orbes faſtigiorum puncta eccentri deferentes/ſecundū extremas ſuperficies centrū deferētiū equātis faſtigiorū puncta habēt : ſecundū reliquas mobile mercuriale deferentis epicycliū centrū/circa deferentiū equātis abſidas centrum/circulum paruū deſcribens. 226

Et mouentur equo/regulariqꝫ tenore ſuꝑ parui circuli centrū contra ſigniferi ſucceſſum tanto tempore/quāto et ſolis medij motus linea(partem tamē in oppoſitam)reuolutionem vnam complentes. 227

Axis huius motus per parui circuli centrū traiectus:interdum a ſigniferi axe/ et poli a polis equidiſtant et interdum variū diſtantie diſcrimen ſortiuntur. 228

Ad horum orbium motum centrū/mercuriale epicyclium deferentis:paruū illum circulum regulariter deſcribit. 229

parui circuli ſemidiametrus tanta eſt: quāta centri equantis a mundi centro diſtantia. Tranſit igitur parui circuli circūferentia per equantis centrū:eſtqꝫ equantis centrum inter parui circuli centrum/et centrum mundi. 230

Apogiū autē ipſum deferētis eccentri circulationē nō explet:ſed cōtinue ſub ſigniferi arcu a duabus lineis a mūdi centro ad ſigniferū porrectis circulum paruū contingentibus apprehenſo/ad centri deferentis motum aſcendēdo/ deſcendendoqꝫ voluitur. 231

Orbis/mercuriale deferentis epicycliū duo ſunt motus. primus in longum: quo ſuper equātis centrū/ſecundū ſignorū conſequentiā naturali quaqꝫ die quantū ſolis medij motus linea regulariter incedit. 232

m.	2.	3
59	8	19

Huius motus axis per deferentis centrū emiſſus ſecundū ſe totū mobilis eſt: cuius poli ad ſigniferi polos nūc accedunt/nūc vero eminus abſiſtunt. 233

Secundus in latum:quo mercuriale epicycliū flectitur/deuiatqꝫ in auſtrum. 234

Mercurialis epicyclij itidē duo ſunt motus.primus in longū:quo in ſuperna quidem ſui parte ſignorū ſeriem ſequens/ inferne autē in aduerſum nitens: quadrimeſtrem ferme circūuolutionem vnam explet. 235

236 Secundo motu in latum nūc inclinatur/nūc reflectitur in boream:nunc idem
ſuſtinet in auſtrum.

237 Linea medij motus mercurij a mūdi centro ad ſigniferū extēta:lineeab equā=
tis centro ad epicyclij centrum producte parallella eſt.

238 Minuta mercurij ꝓportionalia remotiora:ſunt exceſſus maxime mercurialis
epicyclij centri a mūdi centro remotionis a mediocri/in ſexaginta diuiſus.

239 Minuta propiora: ſunt exceſſus mediocris eiuſdem epicyclij centri a mundi
centro remotionis a minima/itidem in ſexaginta diuiſus

240 Maxia mercurialis epicyclij cētri a mūdi cētro remotio: eſt i equātis apogio.

241 Mediocris:dū ab eodē diſtat faſtigio/ſextāte circuli/et ꝑtibus ſeſquiquartis.
Minima vero dum a faſtigio circuli triente diſtiterit.

S.	g.	m.
2	4	30

Signa
4

242 Vtraqꝫ diametri diuerſitas:facile intelligitur.

243 Orbis mercurialis. Deferens faſtigiorū equātis/puncta. Deferens faſtigiorū
puncta eccentri. Deferens mercurialis ſideris epicycliū. Mercurialis circu=
lus eccentrus. Circulus equans. Circulus epicyclus. Apogium mercurialis
equantis. perigiū equantis. Apogium eccentri. perigium eccētri. Mercurij
longitudo remotior. Longitudo propior. Longitudo media. Medium mer
curialis epicyclij apogiū. Verum epicyclij apogiū. Mercuriale epicyclium.
Medius mercurij motus. Verus mercurij motus. Axes. poli. Centrū mer=
curij mediū. Centrum verum. Argumentū in epicyclio mediū. Argumētū
verū. Equatio mercurialis centri in epicyclio. Equatio in ſignifero. Equatio
argumenti. Minuta mercurij proportionalia. Remotiora. propiora. Diuer
ſitas diametri. Remotior. propior. Mercurialis draco. Caput. Cauda.

244 Mercurialis epicyclij centrum : bis annue/deferentes circuli eccentri ſummū
imūqꝫ faſtigiorum puncta/conficit.

245 Quoties mercurialis epicyclij centrum in ſūmo deferentis faſtigio apogioqꝫ
collocatur/a mūdi centro quātum poteſt remotiſſimū:ſubiectum conſimile
deſpicit equantis apogiū/et epicycliū in ſūmo equantis faſtigio eſſe dicitur.

246 Centro mercurialis epicyclij hunc in modū conſtituto: deferentis centrum a
mūdi centro q̄ equantis centrū triplo diſtat/et a centro equātis duplo/eſtqꝫ
in ſummo parui circuli faſtigio.

247 A ſūmo parui circuli loco centrū deferētis pariter et deferētis apogij pūctus
occidentem verſus emoueri incipiūt ad deferentiū faſtigiorū puncta eccētri
motum:quoad ab eo loco/triente circūferentie parui circuli diſtiterint. ap=
propinquabitqꝫ ſenſim deferentis centrū mundi centro:et interim epicyclij
centrū ad orientē emotū/ab ſūmi ſui equātis faſtigio pariter triēte diſtabit.

Signa
+

248 Deferentis centrū hunc in modum diſtans:eſt in contactu linee/a mūdi cen=
tro paruū circulum contingendo ad deferentis circūferentiam emiſſe. cuius
extremitas tunc apogij deferentis ſitum cōmonſtrat/ eſtqꝫ tum deferentis
apogiū ab equātis apogio ad occiduas partes/quantū auocari poteſt ſemo
tiſſimū. et in hoc quoqꝫ ſitu mercurialis epicyclij centrum:quantum poteſt
mundi centro q̄proximum.

Ab huiuſmodi contactus puncto deferentis centrum ſextante circūferentie 249
parui circuli mouebitur ad equantis centrum: et tunc deferētis et equantis
centrū/vnū ſunt/et circulus deferens et equans(cū ſint equales)vnus.

Quo tēpore deferentis centrū ab ipſo contactu ad equātis centrū mouetur: 250
ſummū deferentis faſtigiū ad equātis cōſimile faſtigiū relabitur/et epicyclij
centrū pariter ſui circuli ſextantē deſcribens: ad equantis puenit perigium.

Rurſum deferentis centrum ab equātis centro ad orientis contactū ſextante 251
dimouetur/et epicyclij centrū ab equantis perigio ſextante ad occidentem:
vbi iterū fit centro mūdi quoad poteſt q̄proximū.apogiū autē deferentis in
linee contactus extremitate quātū etiā poteſt ex orientis parte ab equantis
apogio diſcedens.

A contactu exortiuo deferentis centrū triente circūferentie parui circuli de= 252
curſo ad ſūmū eius euadit faſtigiū.et tunc rurſus mercurialis epicyclij cētrū
et deferentis ſūmū faſtigiū:ſimul in primo ſummi equātis faſtigij ſitu reſti=
tuūtur.Ex his:que ſequūtur facile cognoſcimus.

Mercurialis epicyclij centrum tametſi deferētes circuli eccentri apogij eiuſq̧ 253
oppoſiti pūcta/abſoluat:ſolū tamen interim ſemel in ſūmo ſui deferentis fa=
ſtigio comperiri.

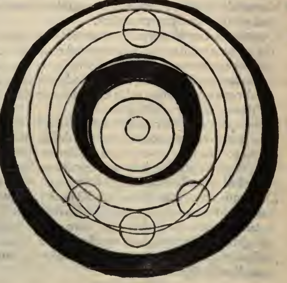
Cum mercurialis epicyclij centrū/mūdi centro fuerit q̄proximū: neq̧ in op= 254
poſito deferentis apogij puncto/neq̧ in linea per mūdi centrū ducta circulū
paruū contingente/conſiſtere.

Tantū ſemel in anno deferētis centrū cū equātis cētro/vnū idēq̧ eſſe: alioqui 255
ſemp a mūdi cētro
q̄ equātis centrum
diſtantius eſſe.

Quo mercurialis e= 256
picyclij cētrum ſū=
mo equantis faſti=
gio vicinius:eo cō=
citatius/&quo eius
oppoſito:eo ſegni⁹
moueri.

Quis epicyclij cen= 257
trū tantū ſemel in
anno a mūdi cētro
abſiſtat remotiſſi=
mū: bis tamen fieri
quoad poteſt pro=
ximum/et nichilo=
minus tantū ſemel
in apogij oppoſito
eſſe.

Hec figura abſoluatur trāſmiſſis tenuiuſculis filis p cētra circulorū.



258 Mercurialis epicyclij centro extra faſtigia conſtituto:perigij deferentis notã nũc inter epicyclij centrũ et equantis perigium volui ac reuolui ad terminũ et a termino linee contactus exortiui/et nũc partem in alterã modo cõſimili. equantis enim apogiũ ſemper epicyclij centro vbiuis alibi conſtituto:centri epicyclij et ſummi faſtigij deferentis fit mediũ.at deferentis perigium/cẽtri epicyclij et equantis perigij medium.

259 Vt apogij deferentis nota/certos vtrimq; cuſtodit limites vltra quos ab editiſſimo equantis culmine faſtigioq; diſcedere nunq̃ valet:ita ſuis limitibus imũ deferentis faſtigiũ ab imi equãtis faſtigij diſceſſu arceri/et motus apogij/ſũmiq; faſtigij arcum maiorem eſſe.

260 Motum apogij deferentis motu note oppoſite velociorem eſſe: et ſummam abſida/apogiiq; notã ab occiduo limite ad oriẽtalem velocius recurrere/imã vero contra ab orientali ad occiduũ velocius.

261 Qꝫ q̃ mercurialis epicyclij centrum in deferentis puncto a mũdi centro remotiſſimo et dum remotiſſimus eſt/eſſe cõtingit:nũq̃ tamen dum propinquiſſimus eſt:in puncto propinquiſſimo eſſe.

Centrum epicyclij mercurij:non circũferentiam deferentis circularẽ/ſed que formam potius exprimat oualem deſcribere.

262 Medius mercurij et ſolis motus:ſemper vnus et idem ſunt.

263 Equationes argumentorũ mercurij in numerorũ ſupputationibus annotate: epicyclij centro in mediocri a centro mũdi remotione conſiſtẽte/cõtingũt.

264 Quia minuta proportionalia in luna a ſũmi faſtigij nota ad imũ cõtinuo minuũtur:in ſaturno/ioue/marte/et venere a ſũmo faſtigio nõ cõtinuo in imũ/ſed in mediã longitudinẽ remotiora iminuũtur minuta : et a media longitudine pari modo minuta propiora in imũ faſtigium/in mercurio vero remotiora a ſũmo faſtigio in mediocrem a mũdi centro contrahũtur remotionẽ/et propiora a mediocris remotionis puncto iterũ ad maxime acceſſionis cõtrahuntur punctũ/a quo rurſus ad abſidis imũ punctũ aliquãtũ augeſcunt: ideo minuta proportionalia in luna ſimpliciter/in ſaturno/ioue/marte et venere dupliciter/in mercurio vero tripliciter/ſeſe habere dicuntur.

primi libri aſtro
nomici theo
rici corpo
rum ce
leſtiũ
finis

Aſtronomici Theorici corporum celeſtium liber ſecundus.

S Ecundus Theoriarum corporum celeſtium liber hec proſequitur.

De ſiderum progreſſione
Regreſſione
Statione
De augmento
Imminumento
Ortu
Occaſu
De coniunctione
Oppoſitione
Aſpectu
De loco
Diuerſitate aſpectus
Latitudine viſa
De deliquio
Digitis
Diametro
Minutis
De declinatione
Latitudine
Deuiatione
Inclinatione
Reflexione

De progreſſione/regreſſione et ſtatione ſtellarum vagarū. Cap. I.

P Laneta progrediens dicitur: quādo veri motus linea ſecundū ſigno= 1
rum ſeriem procedit. Regrediens autem: dum contra ſeriem.

Stationarius: cum medij motus linea/ſtare videtur. 2

Statio prima: eſt epicyclij nota in qua dum fuerit ſidus/regredi occipit. 3

Statio prima in ſecunda ſignificatione: eſt arcus epicyclij apogium eius verū/ 4
ſtationiſq prime notam interiacens.

Statio ſecunda eſt epicyclij inſectilis nota: a qua ſidus progredi incipit. 5

Statio ſecunda in ſecunda ſignificatione : arcus eſt epicyclij apogium verum 6
et huiuſmodi notam per primam ſtationem ſumptus interiacens.

Arcus progreſſionis : eſt arcus epicyclij a prime ſtationis nota per epicyclij 7
apogium in ſecunde notam deſumptus.

Arcus regreſſionis : a ſtationis prime nota per perigium in ſtationis ſecunde 8
notam/definitur.

Stationū notas linee determinant a mūdi centro prodeuntes ex vtraq/ orien 9
tis videlicet et occidua parte circulum epicyclum contingentes.

puncta illa in eodem deferentis ſitu: ab apogij veri oppoſito equidiſtant. 10

Q uanto epicyclij centrum vicinius imo deferentis faſtigio inſtiterit: tāto re= 11
greſſionis arcus minor.

Q uāto epicycliū maius: tāto pgreſſionis arcus maior/et regrēſſionis minor. 12

Q uo motus argumenti ſideris a ſtationis ſecunde nota tardior: eó ſideris p= 13
greſſio diuturnior.

Q; ſi id a ſtatione prima contigerit: ſideris identidem regreſſio tardior. 14

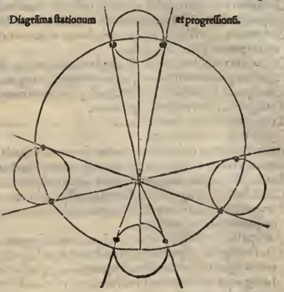
Subducto ſtationis prie arcu a toto circulo: ſtationis ſecūde arcus reliqu' fit. 15

Subducto ſtationis prime arcu ab arcu ſecūde: relinquitur regreſſionis arcus 16

Subducto regreſſionis arcu a circulo/hoc eſt a ptibus ſexagenis et trecentis: 17
progreſſionis arcus reſiduus fit.

18 Omnibus(dempto ſole/lunaq;)vagis ſideribus: progreſſio/regreſſio/ſtatio= neſq; congruunt.

¶De citis/tardis/eois & occiduis. Cap.II



19 Velox/auctūq; curſu ſidus dicitur: cum ſecūdū ſignorū cō ſequentiā velocius fertur.

20 Tardum vero/ imi= nutūq; curſu/quo= ties veri motus li= nea q̄ medij tardi⁹/ aut contra ſignorū conſequentiā mo= uetur.

21 Auctū numero: cū argumēti equatio/ medio motui adii= citur.

22 Imminutū numero: cū ea ſubducitur.

23 Auctum lumine:cū ipſius et ſolis fit abſceſſio.

24 Imminutum lumine:cum ipſorum ſit acceſſio.

25 Orientale et matutinū:cum oritur ante ſolem.

26 Occiduum ac veſpertinum:cum occumbit poſt ſolem:

27 Exoriens matutine:cum ſolis radios egrediens/matutini fit conſpicuum.

28 Exoriens veſpertine:cum ſolis radiorum egreſſu/veſperi conſpicitur.

29 Occidens matutine:cum ſolarium radiorum ingreſſu/mane deſinitvideri.

30 Occidens veſpertine:cum ob eorūdem ingreſſum/deſinit ſero videri.

31 Omnibus planetis:augeri/minuiq; curſu/et numero conuenit.

32 Itidem et omnibus(ſole dempto)augeri/minuiq; lumine.

33 Scematiſmi/figurationeſq; lune cum augetur lumine ſunt:corniculans/diui= dua/pretumida/plena. Et eedē cum īminuitur lumine/ordine quidem imu= tato lune ſunt figurationes:donec intermenſtrua/ſilenſq; fuerit.

34 Ceteris preter ſolem cōmune eſt:interdum exorientes et matutinos eſſe/in= terdum vero occiduales etveſpertinos.

35 Luna/mercuriuſq; atq; venus per vices exoriuntur/occumbūtq; matutine et veſpertine.

¶De coitu/oppoſitione/ſexangulis/quadrangulis et triquetris. Cap.III

m

Edia planetarũ coniũctio: fit quoties ipſorum/mediorũ motuũ linee eadem in ſigniferi parte et minuto ſecundum longum inueniuntur. 36

Et media eorũ oppoſitio: cũ oppoſitis in locis hemicyclo diſtiterit. 37

Coniũctio vera: cum ipſorũ verorum motuum linee ſimili pacto iuncte ſunt. 38

Oppoſitio vera: cũ ille verorũ motuũ linee/ hemicycli diſpeſcũtur interuallo. 39

Coniunctio tum viſibilis dicitur: cum lineea videntis oculo per duũ ſiderum 40
centra procedentes eedem ſunt.

Oppoſitio viſibilis: dum ille linee in locis fuerint oppoſitis. 41

Aſpectus planetarũ ſũt: hexagonus/tetragonus/trigonus: adiũgũt oppoſitũ 42

Hexagonus aſpectus: eſt cũ circuli eclyptici ſextãte/eorũ vera loca diſtiterit. 43

Tetragonus: cum eclyptice quadrante 44

Trigonus: cum eclyptice triente. 45

Oppoſitus: cum hemicyclo. 46

Dexter aſpectus is appellatur: qui ex ſignorum ſequela ſumitur. 47

Siniſter vero: qui e regione/contraq; ſignorum ſequelam aſpicit. 48

Luna a cõiunctione: nunc citius/nunc ſerius redditur conſpicua. 49

Cauſe: finitoris & ſigniferi decliuitas/lune latitudo/velocitas eius/aut tarditas 50

Frequenti vſu euenit vt vera cõiunctio mediam precedat: et contra vt media 51
frequenter veram anticipet.

perſepe item viſibilem cõiunctionẽ: nunc verã ſequi/nunc eãdem precedere. 52

1	qd aſpicit
2	hexagonus
3	tetragonus
4	triquetrus
6	oppoſitus

Cum hexagonus aſpectus ſigna ſit duo: et quod aſpicit ſit vnum/tetragonus 53
tria ſit ſigna/triquetrus ſigna ſit quattuor/oppoſitus vero ſigna ſit ſex: fit vt hexagonus ad id quod aſpicit harmoniã retinere arbitretur diapaſon. tetragonus ad hexagonũ diapente. trigonus ad tetragonum diateſſaron. et idem quoq; ad id quod aſpicit diſdiapaſon. oppoſitus autem ad triquetrum diapente/ ad tetragonũ diapaſon/ ad hexagonũ diapaſon diapente/ ad id quod aſpicit diſdiapaſon diapente.

De loco et diuerſitate aſpectus. Cap. IIII

v

Erus ſideris locus: punctus eſt firmamẽti lineam a mũdi centro per ſideris centrum traiectam terminans. 54

Locus viſus atq; apparens: qui per lineam ab oculo per ſideris centrũ traiectam definitur. 55

Diuerſitas aſpectus ſtelle: eſt arcus circuli magni per finitoris polos et ſtelle verum locum tranſeuntis: ſtelle loco vero/viſoq; interceptus. 56

Diuerſitas aſpectus ſtelle in longũ: eſt arcus eclyptice duobus magnis circulis/quorum vterq; per polos eclyptice/ et alter per verum ſtelle locum/alter vero per locum viſum tranſit/interceptus. 57

Diuerſitas in latũ: arcus itidem magni circuli eſt per eclyptice polos et locũ ſtelle verũ tranſeuntis/ duobus circulis eclyptice equidiſtantibus/quorum vnus per locum ſtelle verum/et alter per locum viſum tranſit/ interueniens medius. 58

Lune ad ſolẽ aſpectus diuerſitas: eſt diuerſitatis aſpectus lune ad ſolis diuer= 59

ſitatis aſpectū/ſecundū longū exceſſus.

60 Latitudo lune viſa: eſt arcus circuli magni per eclyptice polos et locum lune viſum tranſeuntis: eclyptica/circuloq; illi equidiſtante et per locum lune viſum tranſeunte/contentus.

61 Quo ſtella centro mūdi/circuloq; finitori vicinior: eo quoq; diuerſitas aſpectus illius maior.

62 Quod inter circulos magnos per polos eclyptice et locū ſtelle verū et apparentē tranſeuntes de equidiſtantibus eclyptice circulis intercipitur: diuerſitati aſpectus ſecundū longū aſſimilatur. eſtq; diuerſitas aſpectus ſimilis quadrantalis figure diagono: cuius latera/diuerſitates aſpectus in longum ac in latum exiſtunt.

63 Si vera luminariū coniunctio inter horoſcopū et partē ab horoſcopo nonageſimā cōſtiterit: viſibilis coniunctio verā antecedit.

64 In parte ab horoſcopo nonageſima (que meſuraniū/hypergeūq; dicitur) ſi cōtigerit: coniunctio vera et viſibilis ſimul accidunt.

65 Si occaſū inter et meſuraniū/mediūq; celum acciderit: vera coniunctio viſibilem anticipat.

De deliquiis. Cap. V.

66 Deliquiū lunare: quoddā particulare eſt/in quo ſolū lune pars atreſcit

67 Quoddā vniuerſale: cū tota fit furua. Q2 ſi tota atreſcit/et id aliquā to tēpore duret: deliquiū vniuerſale cū mora dicit. Sin vero euaniſde et momentanee tota atreſcit: deliquiū vniuerſale ſine mora.

68 Cum ſol nūq in omni terre plaga totus obſcuretur: non ei prorſus conuenit deliquium vniuerſale.

69 Digiti deliquij/eclypſeoſq;: dicunt vncie diametri corporis deliquiū patiētis.

70 Minuta caſus in deliquio lunari: ſunt minuta ſigniferi que interim luna cōficit ſolē ſuperādo: a principio ad mediū particularis aut vniuerſalis deliquij ſine mora/vel a principio vniuerſalis cū mora ad totius obſcurationis initium.

71 Minuta more dimidie: ſunt minuta ſigniferi que luna a totius obſcurationis initio ad mediū/ſolem ſuperando conficit.

72 Minuta caſus in deliquio ſolari: ſunt que a principio eclypſeos ad mediū vſq; ſole ſuperato vltra ipſum luna peragit.

73 Solis (eo in apogio ſui eccentri conſtituto) viſualis diametrus/vnius et triginta minutorū chorda eſt. in perigio autē quaternorū et tricenorū.

m.	
31	apogiū
34	pigiū

74 Semper que ratio quinarij ad ſexaginta ſex: ea horarij motus ſolis ad ſuā dimetientem. 5. 66.

75 Lune in ſui eccētri et epicyclij ſūmo faſtigio: viſualis diametrus vndetriginta minutorū chorda eſt. At in ſui eccentri ſūmo faſtigio et epicyclij imo: ſenorum tricenorum.

m.	
29	
36	

76 Continuo que ratio quadragintaocto ad quadragintaſeptē: ea eſt motus lune horarij ad ſuam diametrum.

77 Fit igitur vt quopiā in loco ſolis deliquiū poſſit eſſe vniuerſale: nō autē ob diuerſitatē aſpectus/vniuerſe terre. 48. 47.

Dū ſol in ſūmo ſui eccentri collocatur faſtigio: diametrus vmbre in loco tran 78
13. 5. ſitus lune ad diametrū lune viſualē dupla ſupertripartiens quintas reperit.

Exceſſus huiuſmodi diametri dū ſol ſui eccentri ſummā retinet abſida ſum= 79
mūq; eccentri faſtigiū et dū aliubi conſtituit: duplus eſt ad differentiā hora
riorū motuū, dū ſol in abſide ſua ſūma et illo alio in loco eſt.

Si minuta more aut minuta caſus per horariā ſuperationē lune partiantur: tē 80
pus quo ea conficit proueniet.

¶ De declinatione et latitudine. Cap. VI.

Eclinatio ſtelle: eſt eius ab equatore interſtitiū, interuallūq;, ac diſtā 81
d tia in circulo qui per mundi cardines et verum ſtelle locum tranſit
ſupputata.

Latitudo vero ſtelle: interſtitiū ab eclyptica in circulo qui per polos eclyptice 82
et verū ſtelle locū tranſit, ſupputatum.

Sol declinationem habet: non habet latitudinem. 83

Omnium planetarum declinatio eſt. 84

Lune ſimplex latitudo eſt: Saturni, Iouis, Martis duplex. veneris et mercurij 85
triplex.

Circulus eccentrus deferentis epicycliū lune: planā ſemper eclyptice ſuper= 86
ficiem ſuper mundi dimetiente ſecat, vnā eius partē ad boreā, et alterā ad no
tum linquens. eſtq; hec intercapedinis circūferentie circuli eccentri lune ad
eclypticā diſtantia, modo (qui dictus iam eſt) deſūpta: lune latitudo.

Maxima latitudinis lune quātitas: ſemper inuariabilis, eademq; manet ſemp. 87
gra. eſtq; vtrimq; partes quinq;. Ea pars que vergit in boream: borea, ſeptētrio=
5 nalis, arcticaq; dicitur. ea que vergit in notū: notia, meridionalis, auſtrina, an
tarcticaq;.

Cum lunaris epicyclij centrū in nodo capitis fuerit vſq; dum luna in vmbili= 88
cū draconis delata ſit: ſeptētrionalis aſcendens dicitur. ab vmbilico vero ad
caude nodum: ſeptētrionalis deſcendens.

A cauda ad vmbilicū auſtrinū: meridionalis aſcendens. Ab vmbilico ad capi= 89
tis nodum: meridionalis prona, atq; deſcendens. Vmbilicus draconis: pun=
ctus in meditullio capitis et caude. et eſt punctus maxime ab eclyptica lati=
tudinis.

Circulus lunaris epicyclus: nūq̄ a plana circuli deferentis ſuperficie egredit. 90

Fit igitur vt luna ob deflexionē videlicet ſui circuli deferentis vna ex parte in 91
boream et altera in notum: vnā dūtaxat, vnoq; modo ab eclyptica ſentiat la=
titudinem.

Latitudo lune: per latitudinis lune verū argumentū dinoſcitur. 92

Verū latitudinis lune argumentū: eſt arcus ſigniferi a linea veri motus capitis 93
ad veri motus lune lineā ſecundū ſignorū cōſequentiā ſupputatus.

Igitur vero capitis motu dū minor eſt, a vero lune motu deducto, aut dū ma= 94
ior eſt vero lune motui aggregato: verum latitudinis lune prodibit argumē
tum.

¶ De chrono, ſaturnoq;. Cap. VII.

95 Aturni circulus eccentrus ab eclyptica(vt in luna)in partes oppoſi= ſ tas deuergit:maxima ſemper intercapedinis quantitate inuariabili manente.

96 Apogium deferentis ſaturni:ſemper in parte que in boreā decliuis eſt/reperi tur/medium flexionis vmbilicū ſecundū ſucceſſionem partes quinquagenas preueniens.

gra.
50

97 Epicycliū ſaturni in latū ab eius vero apogio mouetur. huius motus axis per epicyclij centrū ad medias epicyclij longitudines traiicitur.

98 Cum epicyclij centrū in alterutro nodorū fuerit:eius ad vera apogiū et peri= gium diameter in plana circuli eccentri ſuperficie recte iacet/et epicyclij ſu= perficies in eclyptice planicie.

99 Centro epicyclij a nodo ſoluente:verarum huiuſmodi diameter abſidum ſen ſim a plana circuli deferentis ſuperficie eminus ſecedit:quoad epicyclij cen= trum ad vmbilicum nodis intermediū perueniat.

100 Ab vmbilico ſenſim ad eccentri ſuperficiē relabitur:dum in altero nodorum fuerit.

101 Ab altero rurſus nodo eadem diametrus a deferētis planicie vt prius ſecedit: et a puncto nodorū medio/ad primum vſq; nodum continuo fit deferentis ſuperficiei vicinior.

102 In hoc quoq; motu dū epicyclii centrū a capitis nodo dimouetur:hemicycliū perigii flectitur in boream/et apogii pars in notum.

103 A nodo vero caude/cōtra:hemicycliū inferius in notum/et ſuperius flectitur in boream. patet ergo ſaturnum duplicem ſeruare latitudinem.

104 Maxima ſaturni latitudo ternis partibus et decimaquita partis vnius diffinit̄.

105 Axis motus in latum ſaturnalis epicyclii:quoties epicyclii cētrū extra nodos iacet/planiciei eclyptice equidiſtat.

gra.	mi.
3	4

106 Axis autē motus in longū epicyclij:quandoq; axi eclyptice equidiſtabit/quā doq; non. at axi deferentis equidiſtabit nūq̄.

107 Superficies epicyclij:nūq̄ cū circuli deferentis ſuperficie iacet in rectū/neq; il li vnq̄ equidiſtat.

108 Dū ſaturnus in ſuperiore ſui epicyclij parte fertur/centro quidem epicyclij extra nodos exiſtēte:a duabus ſup̄ficiebus circuli videlicet eccentri et ecly= ptice/medius intercipitur.

109 Dum in inferiore hemicyclio fertur:remotior ab eclyptica q̄ deferentis ſuper ficies comperitur.

110 Apogium epicyclii verum non ſemper lineę/que per mūdi et epicyclii centra traiicitur/extremitas eſt:apte tamen per eā determinari ponitur. et ita de me dio apogio dicendum.

111 Apogium epicyclii verum continuo eſt in ſuperficie plana/ad equos angulos circuli deferentis ſuperficiem in veri apogii linea ſecante.

112 Et apogium epicyclii medium in conſimili plana ſuperficie/circulum deferen tem in medii apogii linea ſecante.

Centra deferentis et equantis ſaturnii:ab eclyptice planicie declinant. 113

Latitudines ſaturni que in numeris annotant̄:centro epicyclij in vmbilico no= 114
dorū deferentis exiſtente/contingunt.

❡De Ioue. Cap.VIII.

I Vpiter latitudinē habet ex deferētis flexione et apogij veri linee in= 115
clinatione/vt ſaturnus.

gra. 20

Vmbilicus nodorū:ad boreā/ſummā deferentis abſidēapogiiq; no 116
tam ſecundū ſignorū ſequelam partibus vicenis preuenit.

gra. mi. 2 8

Maxima Iouis latitudo:partes due et minuta octo. Reliqua vt in ſaturno. 117

❡De Marte. Cap.IX.

m Ars modo conſimili:duplicē ſuo iure ſibi vendicat latitudinem. 118

Apogii nota deferentis martii ſideris nodorū ad ſeptētrionem vm= 119
bilicus:maximā ea in parte deferentis ſeruat latitudinem.

gra. mi. 4 21 — g. mi. 7 30

Maxima martis latitudo ad boreā:partes quatuor et minuta vnū et viginti/ad 120
notū vero partes ſeptē et minuta tricena. Reliqua vt in ſaturno diffiniantur.

❡De Venere. Cap.X.

V Enus trifariam latitudinē habet:primam deuiationis/ſecundā incli= 121
nationis/et tertiam reflexionis.

Circuli veneris eccentri in boream et auſtrū deflexio:deuiatio dicit̄. 122

Inclinatio eſt linee per epicyclii veras apogii perigiiq; notas euntis/que et ve= 123
ri apogii eiuſq; oppoſiti diameter dicta eſt/a circuli deferentis ſuperficie in
alterutram partem abſceſſio.

Reflexio:linee per medias epicyclii longitudines traiecte/que et mediarū lon 124
gitudinum diameter dicitur/a circuli deferentis planicie in alterutram partē
circa verorū apogii et perigii diametrū itidē abſceſſio.

Superficies deferentis veneris epicycliū:ſuper mundi centro/nunc in boreā/ 125
nunc deflectitur in notum.

g. 90

Axis huius motus per nodos traiicitur:polos habens ab equātis apogio par 126
tes nonagenas diſtantes.

Centro veneris epicyclii in alterutro nodorum collocato:nulla deferentis de 127
uiatio eſt.

A nodo diſcedente:pars quam veneris epicycliū intrat:in boreā partim flecti 128
tur deuiatq; quoad ad alterutrius nodorum vmbilicū perueniat.vbi dū con
ſtiterit/circuli deferētis veneris epicycliū/maxima flexio/deuiatioq; eſt/et eſt
ſcrupula decem.

mi. 10

Soluente epicyclii centro ab equantis vmbilico:deuiationis error ſenſim mi= 129
nuitur donec epicyclii cētrū ad alterū nodorum perductum ſit/vbi nulla de=
ferentis ab eclyptica flexio eſt.

A quo nodorū(vt et prius)pars ea quā veneris epicycliū intrat/demeat in bo 130
ream quoad in alterum peruētum ſit vmbilicū/vnde continuo cū deuiatio=
nis decremēto relabetur in priorem nodum. Et hinc veneris prima ſumitur
latitudo. Nunc de ſecunda.

Veneris epicyclii centro in equantis apogio conſtituto:verarum abſidū dia= 131

meter in deferentis planicie iacet/nuſq̄ inflexa/inclinataq̧.
132 Epicyclij centro ab equantis apogio digrediēte:huiuſmodi diameter a deferētis planicie flectitur:inclinaturq̧ apogiū epicyclij verum in arcton/et eius oppoſitum in notum.
133 Hec ab eo loco inclinatio continuo maior efficitur/dum epicyclij centrum ad caude nodum perductum ſit:vbi maxima huiuſmodi inclinationis latitudo contingit.
134 Et eſt cauda draconis veneris:is interſectionis nodus a quo equantis apogiū nonaginta partibns ſecundū ſignorū conſequentiā diſtat. Caput autē:nota oppoſita/idem apogiū nonaginta partibus ex ſerie preueniens. gra. 90
135 Diſcedente ab huiuſce nodo epicyclij veneris centro:flexionis inclinatio continuo minor relinquitur/dū epicyclij centrū ad equantis peruenerit perigiū. quo in loco rurſū ſuperficies epicyclij ſuperficiei deferentis adiuncta:nullā ſuſtinet inclinationem.
136 Ab equantis perigio eo centro dimoto: hemicyclium ſuperius/ſūmaq̧ abſidū vera modo qui dictus iam eſt inclinatur in auſtrū/et abſis ima in arcton/dū ad nodū capitis epicyclij cētrū perlatum ſit:vbi maxima latitudinis inclinatio contingit/et vnde continuo dū in ſumma equantis abſide reſtituat:cōtractior fit. Et hec ſecunda veneris latitudo. Nunc de tertia.
137 Diameter epicyclij veneris:per medias latitudines trāſmiſſa a deferentis planicie nūc in boreā/nunc flectitur in auſtrū. Et hic a deferētis planicie flexus: reflexio nūcupata eſt. Axis huius motus:epicyclij verarū abſidū diameter.
138 Veneris epicyclij centro in nodo capitis cōſtituto:diameter latitudinū in deferentis planicie iacet/nullaq̧ reflexionis/latitudo eſt.
139 Cētro epicyclii a capitis nodo ſummā verſus equātis abſida/apogiūq̧ diſcedente:diametri pars leua reflectitur in boream/pars autem dextra in auſtrū/dum epicyclii centrū/in equantis abſide ſūma reſtituatur:vbi maxima reflexionis latitudo contingit.
140 pars diametri mediarum latitudinū leua:eſt pars orientalis et que ſecundum ſucceſſionem ſummā epicyclii ſequitur abſidem. dextra vero:illi ex aduerſo collocata.
141 Diſcedente epicyclii centro ab equantis abſidis ſūme nota:reflexio continue decreſcit/cōtrahiturq̧ dū in nodum caude perlatum ſit:vbi rurſus reflexio nulla.
142 A nodo caude mediarū latitudinū diametri reflexio ex leua cōtinue creſcit in auſtrū:dū epicyclii centrū in ima equātis abſide collocetur. A qua denuo cōtrahitur:donec in anabibazonte capitiſq̧ nodo recipiatur. hec tertia veneris latitudo.
143 Centrum epicyclii veneris:nūq̧ deuiat ad meridiem.
144 Motus cētri epicyclii veneris in deferente et de nota ad eandē notā deuiationis reditio:ſeſe ſimul abſoluunt/expediuntq̧.
145 Quotiens maxima deferentis deuiatio contingit:nulla inclinationis latitudo

comperitur.

Et cum maxima inclinatio:nulla reflexio contingit.et vbi reflexio maxima:il= lic inclinatio nulla. 146

Deuiationis ab eclyptica:inclinationes vero et reflexiones a deferentis plani= cie dimetiuntur. 147

Extremitas mediarum longitudinũ diametri in ſua maxima reflexione q̃ ple= req; partium inter ipſam et apogii oppoſitã contentarũ/minus reflectitur. 148

Epicyclii circũferentie punctus quem linea a mũdi centro profecta eiuſmodi contingens extremitatẽ tangit:maxime pre ceteris/reflexionis punctus eſt. 149

Vt mediarũ longitudinũ diameter/motus inclinationis axis eſt:ita vices repẽ dens verarũ abſidũ diameter/motus reflexionis axis. 150

Non igitur vt in ſuperioribus oportet mediarũ longitudinũ diametrũ/incli= nationiſq; axem cõtinuo cũ extra nodos fuerit:eclyptice equidiſtare. 151

Nunq̃ veneris epicyclij ſuperficies:in deferentis planicie ex equo iacet. 152

ℭ De mercurio. Cap. XI.

Ercurii vt veneris triplex eſt latitudo. 153

m Id intereſt.nã quod in deuiatione/inclinatione/et reflexione in vene re flectitur ad arcton:in mercurio conſimilibus ex locis cõuertitur ad noton. 154

Fit igitur vt mercurialis epicyclij centrũ nũq̃ deuiet ad arcton. 155

Maxima mercurii deuiatio quina et quadragena ſcrupula.Cetera:veneree la= titudini ſunt analoga. 156

Secundi Aſtronomici theorici corporũ celeſtiũ/finis.

Id opus impreſſerũt Volphgangus hopilius et Henricus ſtephanus ea in arte ſocii in Almo pari= ſiorum ſtudio Anno Chri ſti Celorum totiuſq; nature cõditoris. 1503. Die vice ſima ſepti= ma Iu= nij.

Recognita ex cõmentario Epitomes Arithmetice et praxi numerandi.

Folio tertio/pagina ſecunda:in ſe ducti conſtituunt 8 vt ducantur primus.legendum:18 vt ducatur.
Fo.13/pagina ſecũda. Similiter extremi numeri 2 et 22 ſunt.legendũ/2 et 26.
Fo.et pagina eadẽ:diſtantiã quarta proſperitate oſtenſã.dicendũ/ꝓprietate.
Fo.14/pagina prima:quare aliquis habet partes.dicendum/aliquas.
Fo.eodem pagina ſecũda:numeri.15.8.62.32.in margine poſiti ſuperuacui ſũt et delendi.
Fo.15/pagina ſecunda. Numeri adinuicẽ primi.1.3.4.figurandũ:2.3.4.
Fo.16/pagina ſecunda:dupli ſuperbipartientes.9.25.64.figurandũ/9.24.64.
Fo.17/pagina ſecunda:Quincu.5.10.5.20.ſcribendũ:5.10.15.20.
Fo.23/prima pagina: Altera parte lõgiores.6.12.20.30.42.56.62.ſcribẽdũ:72.
Fo.eodẽ/pagina ſecunda.cõſiſtentẽ in terminis.9.6.2.legendũ:9.6.4.
Fo.24.in principio ſecunde pagine:8.324.5814.figurandũ/5832.
Fo.43/pagina ſecũda/numero 8.et ab eis ſexies aufertur.dicendũ/quater.
Eodem loco:in denominante notandus eſt 6.legendum.4.
Eodem loco:diuiſione proueniens lineis intermedius/106.dicendũ:104.
Cetera errata(ſiqua ſuperant)vt deprehendantur ſunt facilia.

Recognita ex Aſtronomico.

Numero.
22.Apogium/catabibazon/ſcribendum anabibazon.
30.Apogium/catabibazon:ſcribendum anabibazon.
48.Catabibazon/capitiſq; draconis:ſcribendum anabibazon.
49.Anabibazon/caudaq; draconis:ſcribendum catabibazon.
103.Dum fertur in meridianum epicyclium:ſcribendum hemicyclium.
142.Linea medii motus catabibazontis:ſcribendum anabibazontis.
Cetere mende facile deprehenduntur.

FINE

v

LABOR RESTAU

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